ISSN-0976-0245 (Print) • ISSN-0976-5506 (Electronic)

Volume 9 | Number 10 | October 2018

Indian Journal of Public Health Research & Development

An International Journal

SCOPUS IJPHRD CITATION SCORE

Indian Journal of Public Health Research and Development Scopus coverage years: from 2010 to till date. Publisher: R.K. Sharma, Institute of Medico-Legal Publications ISSN:0976-0245E-ISSN:0976-5506 Subject area: Medicine: Public Health, Environmental and Occupational Health

CiteScore 2015- 0.02

SJR 2015- 0.105

SNIP 2015- 0.034

Covered by Scopus ★ EMBASE ★ Approved by MCI

Website:

www.ijphrd.com

Indian Journal of Public Health Research & Development

Print-ISSN: 0976-0245-Electronic-ISSN: 0976-5506, Frequency: Monthly

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The journal has been assigned International Standards Serial Number (ISSN) and is indexed with Index Copernicus (Poland). It is also brought to notice that the journal is being covered by many international databases. The journal is covered by EBSCO (USA), Embase, EMCare & Scopus database. The journal is now part of DST, CSIR, and UGC consortia.

Website : www.ijphrd.com

Editor

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Institute of Medico-legal Publications
Logix Office Tower, Unit No. 1704, Logix City Centre Mall,
Sector- 32, Noida - 201 301 (Uttar Pradesh)

Printed, published and owned by

Dr. R.K. Sharma
Institute of Medico-legal Publications
Logix Office Tower, Unit No. 1704, Logix City Centre Mall,
Sector- 32, Noida - 201 301 (Uttar Pradesh)

Published at

Institute of Medico-legal Publications
Logix Office Tower, Unit No. 1704, Logix City Centre Mall,
Sector- 32, Noida - 201 301 (Uttar Pradesh)

Indian Journal of Public Health Research & Development

www.ijphrd.com

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Volume 9, Number 10 October 2018

DOI Numher: 10.5958/0976-5506.2018.01305.0

Personal Fableness and Perception of Risk Behaviors among Adolescents

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ABSTRACT

Adolescence is a crucial period where one tends to identify who they are as an individual. However, as a teenager is struggling to find his/her place in this world, it is also a time where they are prone to engaging in risk behaviors, which tend to have an extreme psychological impact. The objective was to explore the experiences of an adolescent who engages in risk behaviors and to understand their level of personal fables. The study was a qualitative design with content analysis with semi-structured interviews of ten male adolescents aged 16-18 years. The major findings of the study indicated that adolescent's pattern of thinking revolves around the fact that they are invincible and invulnerable. Furthermore, adolescents are aware of the risks they are putting themselves through and how in the process they are hurting others. The implications of the study are to conduct more life skill programs in schools; greater awareness has to be created on the impact and harmful effects of such behaviors.

Keywords: *Adolescents, risk behaviors, perceptions.*

INTRODUCTION

"This will never happen to me" is perhaps the most prevalent response from the majority of adolescent's when cautioned about consequences of risky behaviors. Adolescence is a period in one's life where they are recalcitrant to accepting criticism and advice from adults outside their peer group. Most adolescents widely ignore the risks and engage in unsafe behaviors. Empirical findings suggest adolescents' affiliation with friends who engage in risky behavior is a strong predictor of adolescents' health-risk behavior, at least for substance use and violent behaviors[17, 14].

Adolescence is a time of great change for young people when physical changes are happening at an accelerated rate[19]. Physical changes do not just mark adolescence; young people also experience cognitive, social/emotional and interpersonal changes as well. External factors, such as environment, culture, religion, school and the media influence the youth. Statistics relating to adolescent engagement in risky behaviors indicate adolescents drive faster than adults[13], have the highest rates of sexually transmitted diseases[12], the highest rates of self-reported drug use, and commit the vast majority of crimes[2, 3]. Risk factors adolescents engage in include individual factors such as low self-esteem, negative peer groups, low school engagement or pursuit of higher educational aspirations[4]. The familial risk factors include poor child-parent communication, low parental monitoring, lack of family support and parents themselves engaging in risk behaviors[14].

Adolescents perceive themselves as invincible/ invulnerable to their actions that might have negative consequences. This thinking to what Elkind rightly defined as Personal fableness is "an adolescent's intense focus on himself or herself as the center of attention is what ultimately gives rise to the belief that one is unique, and in turn, this may give rise to feelings of invulnerability." Research evidence shows that personal fable levels are high during adolescence and with the association to engaging in risk behaviors[1, 7]. Adolescents

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engage in risk behaviors under the notion that nothing can ever happen to them.

Culture plays an imperative role in behavioral patterns, which needs greater empirical attention. For instance: feeling that one is uniquely different from others (personal fable ideation) may be more characteristic of youth in Western societies, where individualism is typically valued and fostered[4]. Studying this phenomenon from a collectivistic society to understand the risk related behaviors are important. In the fast growing pace of the 21st century, it is evident that the availability of drugs is easily accessible in a collectivist society[15].

The present study aimed to understand the subjective reasoning and differences amongst individuals that lie behind why an adolescent engages in certain behaviors, in spite of knowing their consequences, not attributing it to any theoretical concepts or personality characteristics. Studying this phenomenon from a collectivistic (Indian) society to understand the risk related behaviors are important. The focus has only been on certain risk behavioral characteristics, not taking a cluster of interrelated behaviors into account. This study gave participants an opportunity to talk about their experiences. Exploration of their experiences will allow health workers to introduce better support programs.

Research questions:

What is an adolescent's perception of risk behaviour?

What are the factors that influence an adolescent's perception of risk behaviour?

METHOD

The research design is a qualitative using content analysis method for data analysis. The sampling method included convenience and purposive sampling. The sample size consisted of ten male adolescent participants between the age group of 16-18 years of educated high school adolescents, engaging in risk behaviors residing in Bangalore.

Research Tools

Semi-structured interviews were conducted, as it enabled rapport building, allowed greater flexibility in coverage and probing of novel areas and produced richer data, unlike self-report questionnaires[18]. The demographic data, screening tools Adolescent Risk Behavior Questionnaire (ARQ) and the New Personal Fable Scale[16] was administered to identify potential participants. Ten boys who were engaged in risk behaviours of more than three on the Adolescent Risk Behavior Questionnaire were selected as participants.

Semi-structured interview Schedule was developed to conduct the interviews. The interview revolved around 15 risk behaviors identified with the help various literature reviews. The interview contained ten questions that were developed to elicit the client's subjective perceptions of having engaged in various risk behaviors.

Data Collection and Analysis: Informed consent and permission to conduct the interview were obtained from the school authorities and students. The demographic data and tools were administered in the first phase followed by the interview in the final meeting. The researcher audio recorded the interview and parallel maintained a reflective journal for memo writing. The researcher recorded the impressions of the interview, the interviewee, duration, and atmosphere of the interview. The participants were thanked for their participation in the study and informed the results would be shared with them later on.

Content analysis was used to analyze the data collected. The researcher transcribed and read each transcribe multiple times while simultaneously listening to the respective audio recording to rectify any redundancy or discrepancy. The common themes that emerged after the analysis of all the interviews were discussed in detail along with examples in the form of verbatim responses given by the participants.

Ethical Considerations: The informed consent and voluntary participation was ensured. Participants were made to understand there would be no monetary or any form of reward involved. The option of withdrawing from the study whenever they chose was kept open. The data was used only for research purpose. The study did not have any psychological or physiological harm to the subjects. In case of any psychological distress, relevant help was suggested to be obtained by the school counselor. The Department review committee granted the University ethical clearance for student research.

RESULTS

From the findings of the current study, it can be inferred that adolescents do understand the consequences of risk-taking behaviors. However, they do not seem to integrate their perceptions, to the decision-making process while engaging in such risk behaviors. Adolescents are embodied in nearly every type of risk-taking behavior[3]. Copious human and financial resources are ardent each year to bourgeoning programs that target adolescent risk behavior[8]. Below are the themes, generated from the interviews of the ten participants.

Defining Characteristic of an adolescent: When the participants were asked about their most defining characteristic that makes them different from other individuals, the majority of the responses revolved around how they are willing to take risks/challenges. Many of them feel they have a high sense of willpower enabling them to be more daring, willing to take risks compared to other people they know. About participants feeling, they are more willing to take risks than others; there is a sense of positivity/negativity to their characteristics.

"I'm always willing to take risks; I enjoy hanging out with people who don't go to college or school….., I love riding my bike fast once I'm stoned or drunk, I feel I'm always under control". – A 16-year-old adolescent

Peer pressure: Majority of the participants stated that it's not okay to give into peer pressure. The most common reasons being the social circle they are part of engaging in risk behaviors such as smoking marijuana, cigarettes, and consumption of alcohol. Participants state, initially they have just tried it because their friends were doing so, they were curious and wanted to try it out too, despite knowing their friends shouldn't influence them.

"No you shouldn't give into peer pressure but, I had given in when I first started smoking pot, I felt bad initially, then soon it's you who is peer pressuring someone else to do something."- An 18-year-old adolescent.

Influence of media: The modes of media such as television shows/movies, the majority of the participants stated these mediums influenced them, by seeing famous movie actor's smoke cigarettes/ marijuana and consume alcohol. Furthermore, some participants stated the media has also influenced them in playing pranks such as peeing on a police car or school wall, bursting firecrackers at their principal's office, rash driving and of alcohol. Six participants stated that media had influenced them.

" I first thought it was wrong but as friends were doing it, along with media and everything else I thought it's okay its cool for sometime." - An 18-year-old male adolescent

Self-perception and reasons to engage risk behaviors: Participants who engage in risk behaviors feel a high level of guilt, knowing they're doing something risky/harmful, continuing to engage in such behaviors. Adolescents feel guilty that the allowances they receive from their parents are used for buying substances. One participant feels wrong from a religious perspective to engage in risk behaviors. He rationalizes his behavior by stating, he knows it's wrong at the end of the day life gets tough and engaging in risk behaviors helps him escape it all.

However, four out of the ten participants don't feel guilty in engaging in risk behaviors, stating they aren't harming anyone, as they do it in safe environments. Their friends mostly have the particular substance, which they use. Thus they aren't using their parent's money at all. Six out of the ten participants; stated that they do feel bad and guilty in engaging in risk behaviors. However, continuing to do so because as it is a pleasurable act for them. They have lots of fun, knowing their limits and having control over their usage.

"I feel better when I'm using, I know I'm letting some people down, but I think it's going to be fun for me, I'm always around friends when I do it, so it's fine for me."- An 18-year-old male adolescent

Adolescents are aware of the negative consequences engaging in risk behaviors. However, they justify themselves, by stating they don't feel guilty about doing something wrong. Expressing they aren't doing harder drugs such as cocaine. Some adolescents state as long as it's just consuming alcohol, smoking marijuana and cigarettes they aren't doing something harmful. Sensation seeking and identity explorations are growth-related characteristics, emboldening adolescents to engage in risky behaviors. On the other hand, in the majority of interactions, adolescents tend to not consider risky behaviors as really risky[13]. Nine out of ten participants stated that risky tasks are enjoyable for them, relieve them from stress, make them more calm/

relaxed, allays them from family issues, schoolwork, self-satisfaction, thrill and excitement to test their limits.

"It gives you another world you can experience, when I smoke up I feel more relaxed when stressed with family or studies, it makes me calmer." – A 16-year-old male adolescent

Peer pressure and media influence play a significant role, in risk behavior's among adolescents. Results of the study indicated peer influence plays an imperative role explaining risky behavior during adolescence. In the present study, the majority of the participants believed they were mentally strong, have somehow been victims of peer pressure. Research[7, 8] has validated peer pressure and its relevance to social status among adolescents. Elkind's (1976) concept of personal fable can be seen, in the present study. The way adolescents perceive themselves compared to others when interviewed on this domain. Personal fable gives rise to a sense of invulnerability and specialty with a propensity for behavioral risk-taking[7]. Findings from this study corroborate to what Elkind (1967) suggests. Results of the current study can also be exhibited in other research studies/literature review acquiring similar results. Longitudinal, experimental and cross-sectional studies, postulate robust evidence that, youth are more vulnerable to view smoking favorably and to become smokers; as a result of exposure to smoking in the media. Media brings billions of impersonations of glamorized smoking and consumption of alcohol to millions of youths through TV, movies, video games, music, the Internet and advertisement in general [5].

Some adolescents feel guilty about spending their parent's money on drugs or alcohol. However, many of them state their parents won't even find out or have any notion they engage in such behaviors. Few adolescents perceive themselves to be mentally strong individuals; they can control themselves. However, with risk-taking behaviors, they don't feel mentally strong. A study indicated, adolescents with risk-taking did experience emotions of being fearful, anxious, distressed, saddened, content and thrilled as a consequence[6]. However, they rationalize their behavior by stating that they feel very superior, unique and significant as a consequence of risk-taking[11, 13].

The dimension of sensation seeking and risk personality contributed significantly to patterns of adolescent risk behavior, distinctively to alcohol consumption, delinquency and a much minimal extent to drinking/driving, risky driving, and drug consumption[9]. Furthermore, invulnerability dimension of personal fable also contributed significantly to patterns of risk-taking behavior. Hence, with the present study, although adolescents are aware of the harmful consequences attached to the risk behavior they engage in, many of them feel engaging in behaviors such as consumption of alcohol, smoking, drinking and smoking pot, for example, takes away life's troubles they face every day. Adolescents rationalize their behaviors expressing, how stressful their life has been and engaging in these risk behaviors gives them pleasure/relieves them from stress life has to offer. The influence of peer pressure and the developmental stage that cause adolescents to unambiguously focus on the exhilaration, which accentuated the proliferation of adrenaline[13]. The results further indicated adolescents continue to engage in risks, giving rise to the feeling of knowing it all; and risks alleviate boredom making life more enjoyable.

SUMMARY AND RECOMMENDATION

The major findings of the study indicated an adolescent's pattern of thinking revolves around the fact that they are invincible or invulnerable. An adolescent's high personal fable dimensions of invulnerability and personal uniqueness, causes them to further engage in risk behaviors. However, guilt does play an imperative role when they're testing willpower in engaging in such risk behaviors. Factors such as media and peer pressure further deteriorate their willpower to say "NO." Adolescents rationalize their behaviors, despite knowing the consequences. Adolescents want to experience sensations, enjoyment, and color in their daily routine, experiencing risk themselves[3]. Hence the high functioning of their personal fable continually reinforces them to engage in such behaviors, as well as external factors contributing to it. The implications of the study are to formulate adolescents to reflect upon their actions cognitively from a different perspective. The imperative implication is to encompass supplementary life skill programs in schools. Furthermore; teachers, school counsellors, and parents have to be more involved in such programmes.

Authors Note- This study has not received any grant or funding from any sources. The research team met the expenses. The authors have no conflict of interest.

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DOI Numher: 10.5958/0976-5506.2018.01306.2

The Effect of One-Time Dynamic Soft Tissue Mobilization on Hamstring Flexibility Sustenance between Healthy Males and Females

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ABSTRACT

Background: Flexibility is considered an essential element of normal biomechanical functioning in sport. Though studies have proved that muscle flexibility is improved by massage but incorporation of active contractions into a massage protocol in the form of dynamic deep tissue model is found to be more effective than a classical massage alone. **Objectives:** The aim of this study is to find the effect of one-time dynamic soft tissue mobilization on hamstring flexibility sustenance between healthy males and females. **Methods:** It's a Quasi Experimental Study with totally 48 subjects divided in to 23 males and 25 females were selected based on inclusion criteria were, healthy males and females aged between18 and 25 years and limitation of 20˚ or more from full extension of knee as determined by the Active Knee Extension Test, then the classic massage followed by dynamic soft tissue mobilization was done. **Results**: $P < 0.05$ at 0 2^{nd}, 4^{th}, 8^{th} 32^{nd} minute, hence significant difference exists between the groups. $P > 0.05$ at 6^{th} and 10^{th} minutes, hence no significant difference exists between the Groups **Conclusion:** This study concluded that dynamic soft tissue mobilization had an immediate effect on hamstring muscle length in both males and females, but sustainability was more in females.

Keywords*: Soft tissue mobilization, hamstring flexibility healthy individuals.*

INTRODUCTION

Flexibility is considered an essential element of normal biomechanical functioning in sport [1]. Benefits of flexibility including improved athletic performance, reduced injury risk, prevention or reduction of post-exercise soreness, and improved coordination [1,2,3,4]. Some studies have shown that decreased hamstring muscle flexibility is a risk factor for the development of patella tendinopathy and patellofemoral pain [5,6], hamstring strain injury [6], and symptoms of muscle damage following eccentric exercise [7]. Techniques commonly used by athletes to increase flexibility include static and ballistic stretching as well as proprioceptive neuromuscular facilitation. However recent literature regarding this has also been reported to impair subsequent force, jump height, sprint time, movement time and balance. Compared with common static stretching techniques, there are studies using massage that has shown to increase range of motion without exhibiting detrimental effect on force production [8], and studies have investigated the use of massage as a treatment option for delayed onset of muscle soreness. These studies have evaluated the use of massage to prevent strength losses, reduce muscle soreness and maintain joint range of motion [9,10]. Though studies have proved that muscle flexibility is improved by massage but incorporation of active contractions into a massage protocol in the form of dynamic deep tissue model is found to be more effective than a classical massage alone [10]. Hence a dynamic deep tissue model (DDTM) was developed in manual therapy to treat athletes with muscle tightness and associated soft tissue problems, which comprised of the classical massage component and dynamic component. Incorporation of such a dynamic component increases muscle perfusion and thus decrease muscle stiffness [11]. There are studies that have proposed that the hamstring muscle activation is less in females when compared to males in certain athletic tasks which put them more in risk for an injury.

This difference is because of the variations in anatomical and physiological functions between males and females [12]. Since only limited studies has been done on dynamic soft tissue mobilization and its long term effects, this study is to do a further research on the sustenance of the massage with the dynamic deep tissue model between healthy males and females.

METHOD

Selection and Description of Participants

Totally 48 subjects divided in to 23 males and 25 females were selected based on inclusion criteria were, healthy males and females aged between18 and 25 years and limitation of 20˚ or more from full extension of knee as determined by the Active Knee Extension Test [12]. Previous history of hamstring injury in the past two years, low back pain, lumbar or lower limb neurological compromise, previous traumatic injuries including fractures and soft tissue injuries, Hypermobile joints, Inflammatory process or infections across the joints, menstruating females were excluded. Informed consent was obtained from those who willing to participate in the study. The study was conducted for 6 weeks, at SRM University, India.

Intervention

Procedure for dynamic soft tissue mobilization

Each subject was positioned in prone with the hip and knee in a neutral relaxed position and they received a massage on the hamstring muscle group. A classic massage was performed for 5 minutes, and then followed by the dynamic intervention which comprised of three components. First, the subject's leg was passively extended and deep longitudinal strokes were applied in a distal to proximal direction to the area of hamstring tightness when the leg is moved to the hamstring lengthened position. The same sequence was performed in the next dynamic technique during which the subject actively extended their leg in order to obtain reciprocal inhibition of the hamstrings. In the final technique the subject had to work the hamstrings eccentrically by creating tension in the therapist's hands as the muscle is elongated to the end range of motion. These sequences was performed by the fist of one hand that constituted of 5 deep longitudinal strokes during each sequence and terminated by 20 seconds of shaking. Another physical therapist was present to stabilize the knee such that the hip is at 90˚ flexion throughout the entire intervention. These sequences were terminated in 3 minutes, with the overall treatment time being 8 minutes [10].

Post-intervention measures

The post test values were measured at 0, 2, 4, 6, 8, 10 and 32 minutes through active knee extension test [12].

Active Knee Extension (AKE) Test

Straight leg raise (SLR) or Active Knee Extension (AKE) with the hip positioned at 90 degrees of flexion. Gajdosik and Lusin advocate Active Knee Extension test as it is more selective for measuring hamstring length than the passive straight leg raise (SLR) [13]. The range of dependant knee extension with the hip flexed to 90 degrees by subject's assistance is measured through Goniometer and throughout the Active Knee Extension (AKE) procedure; the opposite hip remained at 0 degree of flexion.

Statistical analysis

Comparing within the groups were done using Paired t-test and between Group A and Group B using the Independent t-test by SPSS Software version 17.0.

RESULTS

According to Table 1, The p value is 0.004, which shows there is a significant difference that exists between the two groups in zero minute; the p value is 0.005, significant difference that exists between the two groups at the second minute; p value is 0.035, which shows there is a significant difference that exists between the two groups at the fourth minute; p value is 0.070, which shows there is no significant difference that exists between the two groups at the sixth minute; p value is 0.05, which shows there is a significant difference that exists between the two groups at the eighth minute; p value is 0.055, which shows there is no significant difference that exists between the two groups at the tenth minute; The mean value of thirty-two minutes for Group A and Group B is 41.43 and 45.40 respectively, and the p value is 0.010, which shows there is a significant difference that exists between the two groups at thirty second minute.

Table 1. Comparison of Post Test Values of Group A and Group B at Various Minutes

Post-Test	Groups	Significance
Zero Minute	Group A	0.004
	Group B	
Two Minutes	Group A	0.005
	Group B	
Four Minutes	Group A	0.035
	Group B	
Six Minutes	Group A	0.070
	Group B	
Eight Minutes	Group A	0.050
	Group B	
Ten Minutes	Group A	0.055
	Group B	
Thirty-Two Minutes	Group A	0.010
	Group B	

$P < 0.05$ at zero, second, fourth, eighth and thirty-second minute, significant difference exists between the Group A and Group B at these minutes.

$P > 0.05$ at 6th and 10th minutes, no significant difference exists between the Group A and Group B at these minutes.

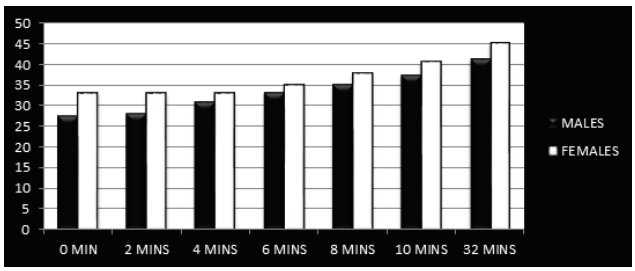

Figure 1. Post-Test Values of Group A and Group B at Various Minutes

DISCUSSION

The main aim of the study is to compare the flexibility sustenance between males and females. This study demonstrated that the hamstring flexibility remained significantly increased in both the Group A (males) and the Group B (females). The post test values of the males obtained values were not consistent instead it started increasing after the zero minute. But in case of females, the post test values obtained were consistent up to 4th minute after which the values built up towards the pre- test values gradually and the post test values at 0, 2, 4 and 32 minutes obtained was statistically significant. The post values at zero minute of group A and group B showed a statistical significance (p 0.000). This increase can be attributed due to the physiological effects of massage combined with the dynamic component of the mobilization. Massage is thought to relax muscle, and could therefore help to enhance joint flexibility by reducing the passive tension of antagonistic muscles [14], and it also has a significant effect on properties of soft tissues like elasticity, plasticity and mobility [15]. Massage may increase the range of motion by reducing the muscle's ability to detect pain and therefore allow a greater range of motion before experiencing discomfort. This theory refers to local lateral inhibition in the spinal cord. This inhibition maybe caused by tactile information stimulating larger rapidly conducting nerve fibers that could compete with and partially block smaller, slower nerve fibres that detect pain [8]. However in two recent studies, hamstring massage was applied using typical Swedish massage protocols for 15-20 minutes. The outcomes of these studies showed no improvement. And there has been studies reporting increased hamstring flexibility by incorporation of a dynamic component to a classical massage for duration of 8 minutes and this proved out to be more effective than a classical massage alone. In the dynamic soft tissue mobilization component a target area of muscle tightness is identified and treatment is focused on that area as the muscle group is moved to the end range of motion [9, 10]. This soft tissue mobilization thus aims at restoring soft tissue mobility by reducing the soft tissue tightness [16]. Given these results, dynamic soft tissue mobilization may also be a viable alternative in rehabilitation situations to help restore range of motion by increasing muscle flexibility. Patients with extremely limited range of motion or those who experience excessive pain during a passive or PNF stretching may benefit from this technique to regain

flexibility. Massage may also benefit rehabilitation patients through psychophysiological mechanisms such as lower anxiety and increased relaxation [8]. A study reported increased skin and muscle temperatures with massage in which their massage was a minimum of 5 minutes [17]. The effect of Temperature on the viscoelastic property of the collagen in muscle is one of the significant factors in flexibility improvement. Temperature has an inverse effect on viscosity; hence as the temperature of the muscle is increased by soft tissue mobilization, viscosity decreases, and vice versa. Reduced viscosity facilitates relaxation of collagenous tissues [18]. However the collagen intermolecular bonding possibly becomes partially destabilized, enhancing the flow properties of collagenous tissues[19].

In this study the sustainability of flexibility is more in females than in males. This can be related to many factors like anatomical and physiological differences, smaller muscle mass, joint geometry and gender specific collagenous muscle structure. Studies by Michael J. Alter suggests that males have a pelvic that is heavier and rougher while females have broader and shallower hips than males and therefore a lower centre of gravity and hence greater range of motion in the pelvic region [20]. Furthermore females have a less resistance to muscle lengthening than males which is attributed to their muscle mass and collagen arrangement [21]. Hormonal factors should also be taken into account in gender consideration which attributes as an important factor in flexibility [22, 23]. The hormones in females maintain joint laxity. Evidence suggests that generally females are more flexible than males-5-7% more flexible [23]. The relatively short duration for the maintenance of the hamstring flexibility may be governed by the Viscoelastic properties of the collagen as mentioned earlier. Viscoelasticity is a property in which deformation or lengthening of a tissue is sustained and the recovery is slow and imperfect when the deforming force has been removed [23, 24]. This property is more in muscles of normal persons and hence the extensibility and flexibility returns back after the force is removed [23]. Hence the decrease in the flexibility with time and the greater sustenance of flexibility in females than in males is most likely due to the combination of the above mentioned factors. These results are unique and may be worthy of clinical considerations in rehabilitation where proprioceptive neuromuscular facilitation stretching or passive stretching becomes more painful to the patient or athlete. Anecdotally, massage is often viewed as a time consuming and non specific treatment option in clinical practice but it is however widely believed amongst athletes, coaches and therapists that massage is an effective treatment and it has been incorporated in pre-event and post- event therapy in sports and also in treatment of soft tissue lesions in clinical practice. Limitations are few individuals withdrew from the study because of personal issues. Force used for mobilization was not quantified. In Future, large sample size, long term effect, athlete's population, anthropometric measures, Emotional, metabolic status and its influence on performance can be analyzed.

CONCLUSION

This study concluded that dynamic soft tissue mobilization had an immediate effect on hamstring muscle length and hence increased flexibility in both Groups A (males) and Group B (females). But the sustenance of that flexibility was more in Group B (females) than in Group A (males).

Ethical Clearance– Taken from Institutional Ethical committee

Conflict of Interest - Nil

Source of Funding – Self

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DOI Numher: 10.5958/0976-5506.2018.01307.4

Effectiveness of Finger Weight-Lift Training and Finger Exercises on Hand Grip Strength among Elderly

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ABSTRACT

Objective: To find out the effectiveness of finger weight lift -training and finger exercises on hand grip strength among elderly. **Methodology** Quasi experimental study design, pre and post type.30 subjects were conveniently selected based on Inclusion and Exclusion Criteria and randomly divided into Group A and B. Each group consists of 15 samples. Finger exercises and finger weight -lift training were given to group A, and group B free from exercises. **Results:** In hand grip strength, GROUP A has not shown any change in mean value .In GROUP B there was decrease in mean value , when compared within groups. In Functional Independence Measure, has not shown any change in mean value in both groups . In hand grip strength, the posttest mean values of GROUP A and B were 19.74 and 17.89 when compared between the groups. There was decrease in the mean values of GROUP B than GROUP A of hand grip strength compared between the group . In Functional Independence Measure has not shown any change in posttest mean value of GROUP A and B from 112.20 to 112.60 when compared between groups. **Conclusion:** The study was concluded that GROUP A with finger weight-lift training and finger exercises has not shown any statistically significant improvement in hand grip strength and Functional Independence Measure. GROUP B showed decrease in hand grip strength and there was no change in Functional Independence Measure.

Keywords: *Hand grip strength, finger exercises, finger weight- lift training, elderly.*

INTRODUCTION

Normal functioning is the process of aging, which influences by the functions of the body dealing with environment of the society and the behavioral [(1).]Grip strength is considered as the upper limb function which can be by a valuable examination[(2,3)]. It is used as surrogate measurement of overall muscle strength[(4).]

The fitness of the muscle has been defined as strength of the muscle and power various properties of the muscle that which contributes to its quality and mass of the individual [(5)]. Grip strength is one of the important techniques for measurement of muscle strength and assessment of muscle function[6]. Hand grip strength is a morbidity and mortality predictor in middle aged and elderly subjects [(6,7,8)] and of older population's disability[(9).]

Bone loss due to age is highly associated with less BMD [(10)] and with weak strength [(11).] Additionally, hand grip strength is useful for assessing the general health of older adults, and predicting both disability and mortality. Handgrip strength declines with age, and especially among individuals aged >80 years. A study of 8342 Danish aged 46 to 102yearsshowed linear declines in handgrip strength with age between 46 and 85 years, and rapid declines after 85 years[(12).]According to Rantanen et al, in all ages the intra-individual strength change over time were significant. In evaluating grip strength hand dynamometer is said to be a reliable instrument and is used in various rehabilitation purposes[(13).]The hand grip strength can be taken with different posture and positions of the body, testing time, body mass index, hand dominance and circumference, length of the limbs, that affects grip strength [(14,15,16)]. In 1981, the Hand Therapists measured hand grip in sitting position with

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adduction of shoulder and rotation in neutral ,flexion of elbow to 90 degree and forearm and wrist in neutral position for grip strength evaluation as the upper limb posture and the segments influence grip strength[17].

The handgrip strength of individuals aged 80 to 89 years is 37% less than that of individuals aged 30 years, and declines with average losses of 1.53 kg/year among men and 0.85 kg/year among women aged 85 to 89 years. Handgrip strength is an important factor which impacts and elderly individual's ability to perform functional activities independently, which typically require maximum handgrip strength of 9 kg.

Skilled finger-movement training can be used to improve an individual's ability to control sub maximal pinch force and hand function [18], [19]. This study aimed to evaluate the effects of finger weight lift training and finger movements on hand grip strength and functional independence among elderly.

METHODOLOGY

The study design was Quasi experimental study, study type was Pre and Post type, sampling method was convenient sampling, the study setting was Birds Nest Old age home, Chennai.The Subjects were selected according to inclusion and exclusion criteria. The procedures were explained in detail and consent form was provided. Institutional Etical Committee approval also obtained.30 subjects aged between 65 to 74 years both male and female were included. Exclusion criteria were the individuals with Severe cognitive impairment, Severe arthritis or nervous diseases of the upper limb, Any condition that restrict the application of hand force, Upper limb congenital defects, unhealed fractures and dislocation. 15 participants were randomly assigned in intervention group(Group A) and 15 participants in control group(Group B).Subjects in Group A performed finger exercises combined with finger weight -lift training and subjects in the Group B did not receive any intervention. The hand grip strength using a hand dynamometer and functional independence was measured using a Functional Independence Measure instrument from both groups before the Intervention.

GROUP- A

GROUP-A performed set of exercises as finger movement exercises and finger weight –lift training.

FINGER EXERCISES:

All the finger exercises were performed in sitting. The finger exercises consists of set of movements. They were palm and opisthenar massage, pinching, stretching, finger counting, pairing, pressing, hand swinging, wrist pressing and turning, crooking and clenching.

Palm and opisthenar massage was done to the subjects by giving pressure between the web spaces of all the fingers and the palmar surfaces of the hand. In stretching each fingers were stretched. In finger counting the subjects were asked to count all fingers.

In clenching, the subjects was asked to make a fist and open. Pressing was done by pressing the wall or table with fingers. Hand swinging was done by swinging the hand by holding the stone suspended by thread.

Each and every movement was repeated 20 times. The exercises were conducted for about 20 minutes.

FINGERWEIGHT-LIFT TRAINING:

Following completion of the finger exercises, the weight lift training intervention was conducted. In the finger weight –lift training, a training bag capable of holding 600ml plastic bottles were designed and constructed. Each participants placed their arms at their sides, keeping their arms and wrist fixed. Then they crooked the straps of the training bag with their finger tips and the bag was lifted with the force produced by their fingers. The fingers were relaxed and the weight was lifted again, repeating the lifting exercise 50 times with 1 or 2 break periods, if needed. The finger weight -lift training was given for about 10 minutes thrice a week. This training was conducted once per day. The weight of the training bag was gradually increased from one to four bottles. This protocol followed for 4 weeks.

GROUP-B The control group did not receive any intervention for period of four weeks.

Hand grip strength were measured using a dynamometer. Participants were positioned with adducted shoulder, elbow flexed 90 degree, and forearm neutrally positioned, wrist dorsiflexed and ulnar deviation. The proper use of hand held dynamometer was taught to subjects. The subjects were given warm up exercise. Once told to begin the grip the subjects increased their grip strength to the best. After a break of

5 min, the participants was tested a second time. The larger value obtained from the two tests is recorded as the hand grip strength of the participants.

The Functional Independence Measure instrument was used to assess the functional ablity of elderly .Posttest measures were taken after 4 weeks.

RESULTS

The hand grip strength and Functional Independence Measure was calculated and tabulated. The data analysis by was done by using IBM SPSS version 20.

TABLE 1: COMPARISON OF POST-TEST MEAN VALUES OF GROUP A AND GROUP B FOR HAND GRIP STRENGTH

		Mean	N	Std. Deviation	Std .Error Mean
GROUP A	Post-test	19.74	15	6.16072	1.59069
GROUP B	Post-test	17.89	15	4.74605	1.22542

TABLE 2: COMPARISON OF POST-TEST MEAN VALUES OF GROUP A AND GROUP B FOR FUNCTIONAL INDEPENDENCE MEASURE

		Mean	N	Std. Deviation	Std. Error Mean
GROUP A	Post-test	112.20	15	10.2553	2.6479
GROUP B	Post-test	112.60	15	13.1301	3.3902

TABLE 3: COMPARISON OF GROUP A AND GROUP B FOR HAND GRIP STRENGTH

		Mean	Std .Deviation	t	Sig.(2-tailed) p value
GROUP A	Pre &post test	1.2800	1.7469	2.838	.013
GROUP B	Pre &post test	-.00867	1.84576	-.018	.986

TABLE 4: COMPARISON OF GROUP A AND GROUP B FOR FUNCTIONAL INDEPENDENCE MEASURE

		Mean	Std. Deviation	t	Sig.(2-tailed) p value
GROUP A	Pre &post test	.2000	.5606	1.382	.189
GROUP B	Pre &post test	.2667	.7037	1.468	.1164

According to Table 1,in hand grip strength, the posttest mean values of GROUP A and B are 19.74 and 17.89 when compared between the groups. There is decrease in the mean values of GROUP B than GROUP A of hand grip strength compared between the groups. According to Table 2, in Functional Independence Measure has not shown any change in post-test mean value of GROUP A and B from 112.20 to 112.60 when compared between groups.

According to Table 3 & Table 4 the P value is 0.013 which <0.05, it is statistically significant. It shows that only the hand grip among the GROUP A has significantly improved than GROUP B among the within group comparison. The GROUP B has not shown any statistical significance for both the hand grip and also for the Functional Independent Measure when compared with its pretest values.

DISCUSSSION

The objective of the study was to find out the effectiveness of finger weight-lift training and finger exercises-palm and opisthenar massage. According to the statistical analysis, hand grip among the GROUP A has significantly improved than GROUP B among within group comparison. In GROUP B has not shown any statistical significance for both the hand grip and also for the functional independence measure when compared with its pretest values.

J.J.Keysor, A.MJette(2001)concluded that finger movement exercise program can also improve age related regression of hand function of the individuals. Thus it improves muscle strength by the repeated movements and the physical function of the individual who perform the finger exercises [20].K.L.Rush ,W.E.Watts (2013) stated that that older adults who are physically active can regain some amount of lost strength as they age. Finger movement exercises are helpful in regaining the lost muscle strength and thus improving their functions [20]. Ranganathan VK, Siemionow V, Liu JZ. Guang (2001) concluded that skilled finger-movement training such as stretching, wrist pressing, clenching, clasping and counting etc can be used to improve an individual's ability to control sub maximal pinch force and hand function. This training program induced a positive change in excitability of motor neurons innervating a muscle for controlling grip. These improvement allow elderly to have more independent life [21]. Poornima et al., suggested that decline in muscle strength in the type 2 diabetes mellitus.This stated that decline grip strength is associated with the metabolic profile[22].

Brorsson, Sofia, Christer(2009) concluded that there is a significant improvement in hand force during grip and hand function in individuals after hand training and hand exercises. This leads to better hand function and muscle strength of an individual [21]. Tanja Alexandar Stamm, Josef Sebastian Smolen (2002) concluded that the hand exercises were found to be effective means to increase hand function thus improving individuals to lead their activities independently[11].

K.Kawanabe,V.Sagahl, Singh.M.A (2007)stated that the whole body vibration exercises and muscle strengthening exercises have a great role in the improvement of muscle strength in the elderly aged sixty seven years[16]. This study showed improvement of the hand grip strength with finger exercises and finger weight lift training which are contradictory to our results. The results of GROUP B was supported by Anton JM, Taekema D, Draen D, Gussekloo (2011) concluded that the elderly aged >65 years who did not underwent any exercises showed declined at an average of the hand grip strength values.

Many studies shows that there is improvement in hand grip strength with finger exercises and finger weight-lift training.In this study there is no changes in hand grip strength may be because of less study duration and less number of samples.Hence the study concluded that there was no change in hand grip strength in GROUP A and decrease in hand grip strength in GROUP B.In Functional Independence Measure there was no change in both GROUP A and B.

CONCLUSION

The study was concluded that the Experimental group who underwent finger weight-lift training and finger exercises has not shown any statistically significant improvement in hand grip strength and Functional Independence Measure.

Control group who were not given any intervention showed decrease in hand grip strength and there was no change in Functional Independence Measure. The limitations were the intervention period used in this study was relatively short and the sample size was small. The recommendations in this study were the hand

grip strength influencing factors such as gender, age, and hand dominance can be taken. With the different positions of elbow, forearm and wrist, hand grip strength can be analyzed. Further studies can be analyzed by comparing the young old and older old in geriatric population. Further studies and observations are needed to confirm our results with long duration to determine whether the types of intervention used in this study can improve handgrip strength and Functional Independence Measure. Larger sample size can be studied.

Conflict of Interest: Conflict of interest declared none.

Source of Funding: Self

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DOI Numher: 10.5958/0976-5506.2018.01308.6

Policy and Determinant Analysis in Effort to Control Stunting Case in Bengkulu Province

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ABSTRACT

Background: The case of stunting in Bengkulu province is ranked sixteen highest in Indonesia. It has increased from 36% in 2007 to 40% in 2013. The purpose of the study is to know the dominant factors that influence the incidence of stunting in Bengkulu Province.

Method: The study design was Cross-sectional with multistage random sampling technique. The total samples analyzed in this study were 739 infants who attained the age of 6-24 months from the 2015 Nutrition Status Monitoring Survey in Bengkulu Province. Data included sex, birth weight, age of weaning, implementation of Early Breastfeeding Initiation, maternal age, maternal education, maternal occupation and Body Mass Index (BMI). The data were collected using questionnaires. Secondary data were analyzed using logistic regression.

Result : The study found 27,1 % stunting stunting and 56% male, normal birth weight 97.2%, age of weeding <2 years counted 64.7%, no early breastfeeding initiation (58,1%), mother's age ≥ 20 years old 93.2%, low education of mother 47.8%, unemployed mothers 72%, and abnormal BMI of mother 59.4%. Factors associated with the incidence of stunting are maternal work and education. Maternal employment is the dominant factor affecting the incident of stunting in Bengkulu Province. Toddlers with working mothers will be 1.47 times more likely to have stunting compared to toddlers with unemployed mothers.

Conclusion : The socialization of stunting to worker mothers is much needed. The work makes a woman spending more time outdoors so that attention to the child's dietary habit is reduced.

Keywords: *Stunting Determinant, Mother's job, Efforts to prevent stunting*.

INTRODUCTION

Latest data of World Health Organization (WHO) revealed that Asia ranked as the first of stunting case in the world. About 86.5 million under five children in Asia underwent Stunting. The Southeast Asia was the second highest which was 15.1 million under five children after South Asia. It is estimated that there were 162 million short toddlers in 2012, if the trend continues without any reduction effort, it is projected to be 127 million in 2025. As many as 56% of short children live in Asia and 36% in Africa[1].

The results of the Basic Health Research (Riskesdas) in 2013 showed that the national short prevalence in 2013 was 37.2%, which meant an increase compared to 2010 (35.6%) and 2007 (36.8%). The short prevalence of 37.2 percent consisted of very short 18.0 percent and 19.2 percent short[2]. Public health problems are considered severe when the prevalence of stunting was 30%-39% and it was serious if the prevalence was > 40%[3].

Stunting is more vulnerable to illness and into adolescence tends to be overweight and prone to non-communicable diseases[4]. Stunting children are widely accepted predictors of low-quality human resources, and decrease the productive capacity of a nation in the future[5]. In the Nutrition Review by UNICEF (2012) it was explained that interventions to lower stunting should start precisely before birth, with prenatal and maternal nutrition, and continue until the age of two[5].

Bengkulu Province is in the sixteenth highest case of stunting in Indonesia It increased every year, 36% in 2007, 31.6% in 2010 and 40% in 2013. If it does not immediately followed up then the stunting case will increase continuously.

MATERIAL AND METHOD

A community based on cross-sectional study design was conducted in ten districts Bengkulu province (Bengkulu, Rejang Lebong, Lebong, North Bengkulu, Muko-Muko, Seluma, South Bengkulu, Kaur, Bengkulu Tengah, Kepahyang) from May to September, 2015. The population was mothers who had children 6-24 months. Multistage cluster sampling was used to select the study population. Eligible mothers were invited to interview using questionnaires to gather data.

The total samples analyzed in this study were 739 toddlers who were 6-24 months. It was taken from the result of Nutrition Status Monitoring Survey in 2015, Bengkulu Province. Data covered sex, birth weight, age of weaning, implementation of Early Breastfeeding Initiation, maternal age, maternal education, maternal occupation and Body Mass Index. The data were collected using questionnaire. The data was analyzed using computer program. Chi-square test was used to compare the proportions. Multivariate multiple logistic regression analysis was used to determine the dominant factor of stunting. The level of statistical significance set up at $p < 0.05$.

RESULT

Table 1: Characteristic of mother and under two year children can be seen.

Variable	Category	Frequency	(%)
Stunting case	Normal	539	72.9
	Stunting	200	27.1
Gender	Male	414	56
	Female	325	44
Weight of Birth	Normal	718	97.2
	BBLR	21	2,8
Age of weaning	≥ 2 years old	261	35.3
	< 2 years old	478	64.7
Early Breastfeeding Initiation	Yes	310	41.9
	No	429	58,1
Maternal age	≥ 20 Tahun	689	93.2
	< 20 Tahun	50	6.8
Maternal Education	High	115	15.6
	Medium	272	36.8
	Low	352	47.8
Maternal Occupation	Employee	207	28
	Unemployed	532	72
Maternal Body Mass Index	Normal	300	40.6
	Abnormal	439	59.4

Based on table 1, There is toddler stunting (27,1%), males (56%), normal birth weight (97.2%), people of weaning age <2 years (64.7%), people who did not doing early breastfeeding initiation (58.1%), mothers with the age ≥20 year (93.2%), mothers with low education (47.8%), unemployed mothers (72%), and abnormal body mass index of mothers (59.4%).

Factors Related to Stunting

The result of bivariate analysis using chi-square test to see the relationship of sex, birth weight, age of weaning,

initiation of early breastfeeding, mother age, education, occupation and body mass index with Stunting can be seen in table 2 as follows

Tabel 2: Factors associated with the insidence of stunting in Bengkulu Province

Research variables	Category	Stunting Case				Total		p value
		Normal		Stunting				
		N	%	N	%	N	%	
Gender	Male	302	72.9	112	27.1	414	100	1.000
	Female	237	72.9	88	27.1	325	100	
Weight Birth	Normal	525	73.1	193	26.9	718	100	0.684
	BBLR	14	66.7	7	33.3	21	100	
Weaning age	≥ 2 Tahun	193	73.9	68	26.1	261	100	0.711
	< 2 Tahun	346	72.4	132	27.6	478	100	
Early breastfeeding initiation	Yes	219	70.6	91	29.4	310	100	0.268
	No	320	74.6	109	25.4	429	100	
Maternal age	≥ 20 Tahun	503	73	186	27	689	100	1.000
	< 20 Tahun	36	72	14	28	50	100	
Maternal education	High	92	80	23	20	115	100	0.042
	Medium	204	75	68	25	352	100	
	Low	243	69	109	31	352	100	
Maternal occupation	Employee	142	68.6	65	31.4	207	100	0.018
	Unemployed	397	74.6	135	25.3	53	100	
Maternal body mass index	Normal	220	73.3	80	26.7	300	100	0.907
	Abnormal	319	72.7	120	27.3	439	100	

Based on the bivariate analysis, there was no correlation among gender, weight birth, weaning age, early breastfeeding initiation, maternal age, and BMI toward the stunting case. But there was a correlation between maternal education and maternal occupation with the stunting case.

Multivariate Analysis

Multivariate analysis had done to see which one was the dominant factor that affected stunting. Since having done the multivariate analysis, the result can we see in table 3.

Table 3: Multivariate analysis of Stunting case in Bengkulu province

Analysis Steps	B	*P*	OR	95% CI
Step 1				
Maternal education	0.314	0.082	1.369	0.961–1.951
Maternal occupation	0.389	0.020	1.476	1.064–2.047
Constant	-1.667	0.000	0.189	

Table 3, showed that the most dominant factors were the maternal education and occupation. The under five children with employee mothers would be at risk of stunting 1.476 times compared to the under five children with unemployed mothers. Thus, the toddlers with maternal low education background would be at risk of stunting 1.369 times compared to the toddlers with medium and high education background of mothers.

DISCUSSION

Factors Affecting Stunting

The results showed that education is a factor affecting the incidence of stunting in Bengkulu Province. The results of this study were consistent with the Shine study (2017) that it showed the prevalence of stunting in children aged 6-59 months which determinant were gender, maternal age, maternal education, maternal occupation, income, postnatal care visit, first milk given, bottle milk feeding[6]. Seedhoom (2014) showed the results that factors affecting stunting were low birth weight, short stature, mother education, lack of knowledge of mother about nutrition[7]. According to Senbajo (2011) the main factor affecting stunting in Abeokuta, Nigeria was mother education. It was an important factor in child growth[8]. Higher maternal education will improve the mother's behavior in seeking information about family health and use of health services thereby reducing the incidence of stunting.

Semba (2008), stated that there is a strong relationship between the two variables[9]. Nzala (2011) showed that factors associated with the incidence of stunting were gender and low maternal education[10]. The most dominant factors affecting the incidence of stunting were gender, maternal employment status, family history of TB, antenatal care visits, parental illiteracy, home density, mass media, and water availability[11]. Wealth index, maternal exposure to mass media, child age, child size at birth, and parental education related to stunting[12].

According to Paudel (2012), several stunting-related factors in Nepal, including socioeconomic status, environmental factors, exclusive breastfeeding, supplementary food intake, food diversity and diarrheal diseases[13]. Exclusive breastfeeding, socioeconomic and infant with LBW were factors related to the caase of stunting in Nepal[14]. This was also reinforced by the results of the Susanti study (2015) which showed the consumption of maternal food during pregnancy, exclusive breastfeeding, additional feeding history, infectious disease, nutrition, immunization and family economic factors were the contributing factors in stunting case in Papua[15].

Some of the determinants were age, sex, socioeconomic status, and four main findings. The findings were (1) 2-year-olds were predictable stunting, (2) children who were introduced food too early can increase underweight, (3) vaccine and immunization of infectious diseases can be a protective factor of stunting case, and (4) live with non-biological parents could increase the stunting case[16]. The factors that mediate the immediate causes of stunting events were: insecurity household food, inadequate health care and dietary patterns and unhealthy household and environmental conditions (low income, poor sanitation and hygiene behavior). But the basic causes of this stunting event were education, and socio-political issues of economics[4].

Policy of Controlling Stunting

Provincial and district/municipal governments have intervened to prevent/reduce the number of under five children with stunting through the program: 1) Fulfill the nutritional needs for pregnant women. Pregnant women should get adequate nutritional food, nutritional supplementation (iron substance or fe), and monitor their health; 2) Exclusive breastfeeding (ASI) until the age of 6 months and after 6 months of age are given Complementary foods of exclusive breastfeeding with sufficient quantity and quality; 3) monitoring the growth of under five children in "posyandu" is a very strategic effort to detect early growth disorder; 4) increasing access to clean water and sanitation facilities, and maintaining cleanliness of the environment; 5) provide a breast milk corner at work.

Approach to prevent stunting such as micronutrient supplements for pregnant women and children (especially iron, zinc, calcium, and folate); increased availability of enriched fats Commercial products such as Nutributter and Plumpy'nut; encouraging breastfeeding during the first six months of life; and efforts to improve the complementary nutritional quality for baby food when weaned[17]. Continuous exposure to human and animal waste can lead to chronic bacterial infections. These infections caused by poor sanitation and hygiene practices. Those made the nutrition difficult to absorb by the body. One study found that Bangladeshi children

with access to drinking of clean water, healthy toilets, and facilities for hand washing with soap increased 50% in height for age scores compared with controls of children who did not expose the access[18]. Similar results emerged from a study in Sudan[19]. Children living with poor hygiene became dwarfed by frequent chronic diarrhea. The authors revealed a strong link between growth disturbance and diarrhea of five or more episodes in the first two years of life [20].

Government's policy by instructing all workplaces to provide premises for breastfeeding mothers, in an effort to improve infant health and control stunting for infants and children in the future. The American Academy of Pediatrics policy supports the publication of the benefits of breastfeeding for infants, mothers, and communities although the economic, cultural and political pressures often confound decisions about infant feeding. Breastfeeding ensures optimal achievement for the health, growth, and development of infants and children[21]. Beside of that, the overall level of breastfeeding initiation got near to Healthy Community Goals, both the level and duration of exclusive breastfeeding. Furthermore, the concepts and recommendations of Annual Summit on Breastfeeding are to familiarize policy makers, non-governmental organizations, media representatives, business leaders and the like with health needs communities to urge for breastfeeding support[22]. A special place for breastfeeding for working mothers is absolutely necessary for the healthy growth and smart children.

CONCLUSION

In Bengkulu province found 27.1% of stunting. The result of analysis showed the stunting case appeared because of the parents' education and occupation. The occupation was the most dominant factor. Employed parents should continuously give their attention to the dietary habit and healthy of the children. The government's policy was appropriate as the effort to prevent stunting through nutrition fulfillment of pregnancy women, exclusive maternal breastfeeding, additional nourishment of maternal breastfeeding, controlling the toddlers' growth at "posyandu", increasing access to the clean water and sanitation facilities, as well as keeping the environment clean and providing area for maternal breastfeeding at working places.

Conflict of Interest Statement: The authors declare that there is no conflict of interest.

Source of Funding: We are very grateful for the funding from health polytechnic of health ministry Bengkulu which was very supported us in doing this research.

Ethical Clearance: Health Research Ethics Committee, Health Polytechnic of Health Ministry Bengkulu.

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DOI Numher: 10.5958/0976-5506.2018.01309.8

Children's Understanding of Cancer: Developmental Trend in their Conceptual Complexity

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ABSTRACT

This study aimed to understand children's conceptualization of the disease cancer and track the changes in the complexity in comprehending cancer with progression in class. The sample was drawn from three schools that enrolled socioeconomically disadvantaged group of children enrolled from class VI to class X. Results were analyzed using a combination of qualitative and quantitative analysis. Content analysis identified a total of seven themes into which the responses were distributed. The complexity of conceptualization was measured by evolving Entropy scores or Divergence Index. It clearly tracked a progressive developmental trend in complexity of the schema among the children.

Keywords: *cancer, conceptual complexity, cancer awareness, children's concept, concept development*

INTRODUCTION

Cancer is one of the predominant causes of mortality and morbidity with an increasing incidence in India. Besides genetic and biological predisposition, lifestyle is identified as a precipitating factors. As per the projection of Indian Council of Medical Research[2] the incidence of cancer would increase to over 1.73 million by 2020. This should raise an alarm culminating in plan of action for the generation for which the projection is relevant. Given the fact that the projections are relevant for the present population of children, educating them can be a step towards cancer prevention in India. Studies conducted in India about children's awareness of cancer provide varied results. A study on children of class VI to X revealed that only 16.72% have heard of cancer.[4] Contrary to this, other studies indicated knowledge of cancer among 52.6%[5] and 83.59% [6] of children.

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As mentioned earlier, cancer is related to lifestyle[1] that includes health promotion and health risk behavior. Among others, smoking, chewing tobacco and alcohol were identified as the most common risk factor for cancer by school children[6]. Research on children revealed that knowledge on the risk of passive smoking and use of cooking oil was low, though active smoking was rightly identified[7]. Misconception of cancer being contagious or communicable existed[4].

It is significant to understand children's concept of cancer itself because knowledge about the risk factors will assume significance only when their understanding of cancer as a disease is correct. Accuracy of knowledge has been found to increase and became differentiated with age[8,9].

Some of the most common methods used for research on children are questionnaire[10], interview[6], and projective techniques such as draw and write[9], Q methodology[11], closed ended questions[4], open ended questions and so on. Open ended questions despite the disadvantages of excessive details, provide the scope for free expression, particularly when children are the respondents. Keeping this in view, the present study is an attempt to investigate the knowledge level of school

children regarding cancer using open ended question and a combination of qualitative and quantitative analysis.

Research questions

The main research questions of this study were:

How do school children conceptualize cancer?

Does the concept of cancer develop in its complexity across age?

OBJECTIVES

To understand the conceptualization of cancer among children from 6th class to 10th.

To track the divergence index in comprehending cancer among these children.

METHOD

Participants

The sample selection was made in two stages. In the first stage three schools catering to the children from lower socioeconomic groups, managed by government, Private trust were identified. All the children from class 6th through 10th who were willing to participate and sign the assent were included in the final sample. A total of 639 students constituted the sample. Of this 344 (53.83%) were boys and 295 (46.16%) were girls.

Instrument

A sheet of paper with one side of it to record the personal information of the respondents and the other side with a single open ended question – "what do you know about cancer?" was used as the tool in this study. The space provided for their response was limited to six lines.

Procedure

The children were assembled in their respective classrooms. Those willing to participate were made to sign the assent form. The children were given verbal instructions about their task. They were instructed to write their response in the blank space provided beneath the question. One could explain the concept in more than one way. No time limit was set to complete the task. However the maximum time taken was 15 minutes.

Content analysis and Coding

The total response sheets were systematically assigned a numerical code for the purpose of identification. Owing to irrelevant or incomprehensible responses, 47 response sheets were discarded. The remaining responses were read and re-read independently by three investigators, who coded each response with a theme. The thematic coding of the three investigators was collated. Wherever there was total agreement the responses were classified under the coded themes. But in case of responses where the investigators differed in coding, discussions were held among the three investigators to arrive at a decision on its category on consensus. A total of 882 responses from 639 students were classified under 7 themes. The responses that indicated wrong notion of cancer were brought under the head of 'misconceptions'.

Derivation of Divergence Index as a measure of conceptual complexity:

Responses across the classes that were distributed along the seven themes were given a quantitative expression by taking class-wise frequencies under each theme as the basic value for further calculations. The assumption for measuring conceptual complexity for each class was that, the more the spread of responses across the themes, the higher is the divergence, indicating complexity of the schema. The divergence is termed as "entropy". The term entropy has its genesis in Physical Sciences where it indicates 'disorderliness' or absence of a predictable pattern indicating a convergence. In the context of expressing the responses of a class across themes, we define entropy as divergence of responses across the themes.

An attempt was made to calculate entropy for each class using a formula.

To evolve the entropy value, the first step was to calculate the probability of the number of responses given by any individual student in a class under a theme.

$$\text{Probability (P)} = \frac{Number\ of\ responses\ per\ theme\ of\ the\ class}{Total\ number\ of\ responses\ of\ the\ class}$$

'P' stands for probability.

This value of P is then formed into a logarithmic value for better meaningfulness. Following is the

formula applied.

Absolute Entropy (E)= Σ (I×P), where
Where, I = - log
P = Probability

The 'probability' value is influenced by the size of the class. Thus, the entropy value which is the logarithmic transformation of the 'P' is affected by the class size. Since, the 'n' across classes is not uniform, the entropy values of different classes cannot be compared. Hence, it was necessary to adjust the entropy value for class size. This is done by evolving the Balancing Factor (B_F) by dividing the sample size of the class with total sample by applying the following formula.

$$B_F = \frac{\text{Sample size of a class of students}}{\text{Total sample of students}}$$

When the absolute entropy is divided by the Balancing Factor (B_F), what is arrived at is Divergence Index (DI) also called as Neutralized Entropy (E_n).

$$DI = \frac{E}{B_F}$$

RESULTS

The results are presented in qualitative as well as quantitative forms. The qualitative aspect of results refers to the content analysis and presentation of the themes that emerged from the responses of each class. The quantitative aspect of results refers to the outcome in terms of divergence in conceptualizing cancer. This has been arrived at by calculating entropy values using a mathematical formula.

Seven themes emerged from the responses covering almost all dimensions related to the disease. It is surprising to note that the responses covered even the psychosocial aspects related to cancer. This reflects the exposure that the children had about the disease.

Misconceptions regarding cancer were also considered. The subthemes under this were consumption of excess sugar, caffeine (tea/coffee) and mosquito bite as a cause or classifying cancer as communicable disease.

Figure 1 depicts the distribution of responses across seven themes and misconceptions. It may be observed from the figure that 38% of responses related to the causes of cancer followed by the generic descriptions of cancer (32%). Responses to the extent of 10% of responses were related to the symptoms of cancer. Responses pertaining to side effects of treatment and treatment of cancer figured to 8% and 6% respectively. In all, prevention of cancer and psychosocial correlates were found to be contributing 3% and 1% to the total responses. Misconceptions such as consumption of sugar, drinking impure water, mosquito bite as the causes of cancer and that cancer is a communicable disease consisted of 2% of overall responses.

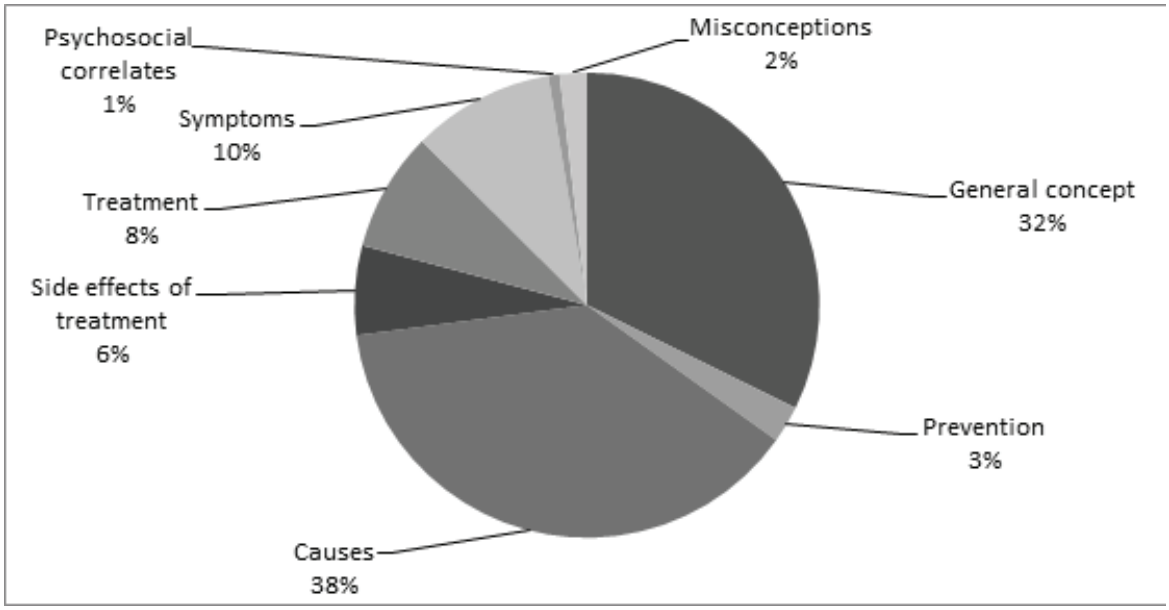

Fig 1 Distribution of responses across theme

In table 1, the trends obtained in entropy and response ratio are discussed.

Table 1 Summary showing class-wise trend of awareness on cancer disease

Class	N(Participants)	Responses	Absolute Entropy(E)	P	E_n/DI
6	137	189	0.63	0.21	2.68
7	144	200	0.60	0.22	2.24
8	152	203	0.53	0.23	2.89
9	143	204	0.64	0.22	4.82
10	64	76	0.48	0.10	5.60

Note. N=Total number of participants; E = Absolute entropy; P = probability of responses; DI = Divergence Index or E_n Nuetralized entropy)

An attempt was made to examine if the students of different classes differed in having divergence in conceptualizing cancer. This is measured by calculating the 'Entropy' explained earlier. Table 1 presents the Absolute Entropy values and Neutralized Entropy (E_n) values or Divergence Index (DI). The progressive growth in Divergence Index across classes indicate that as the students' progress in their class, higher is their spread of responses across the themes, indicating complexity in their schema of 'cancer'. While there is a minor increase in DI between class VII (DI=2.24) and class VIII (DI=2.89), a spurt is noticed between class VIII (DI=2.89) and class IX (DI=4.82) and class IX (DI=4.82) and class X (DI=5.60). An inexplicable drop is also observed from class VI (DI=2.68) to class VII (DI=2.24).

DISCUSSION

Looking across the classes, we see a progressive increase in Divergence Index or neutralized entropy across the classes. Although there was only a marginal increase in the neutralized entropy from class VI through class VIII, with a slight dip in class VII, we see a steep rise between IX and X classes. This is in consistence with Piaget's cognitive theory[12], which talks about expansion in different schema across age through the process of assimilation and accommodation. This is also supported by a study which indicated the knowledge of breast cancer to increase with level of education[13]. This increase could also be a reflection of the school syllabus[13]. A scrutiny of the syllabus in the subject of Biology of the present sample revealed a strong thrust on health related topics in the textbook of class X. Bibace and Walsh[12] suggested that during the concrete operational stage, children's explanations of illness revolve around Contamination (transmission through physical contact) and Internalization (external agent enters body through swallowing or inhaling and affects internal organs). During the formal operational stage, children explain illness through physiologic and psychophysiologic causes. Physiologic explanations by children usually comprise of internal organs not functioning properly. Psychophysiologic reasons include how emotional states can affect our bodily functions. Results of the present study reflect similar findings with children of class X (who are in the age group of 15 to 16 years when their cognitive development is in formal operation stage) giving multidimensional explanation towards cancer, that correctly included physiological and psychological aspect.

We can see that the children's "general concept" about cancer comprised of it being fatal, dangerous or harmful, an uncontrolled growth of cells, a non-communicable disease, highly prevalent, incurable, curable with early detection, availability of good treatment and reduced recurrence rate. These perceptions of children are found to be in line with the facts stated in research articles[14,15,16,17,18].

The less discussed causes like obesity, sedentary lifestyle, hepatitis B & C virus (HBV/HCV), human papilloma virus (HPV), immune system dysfunction, aging, hormonal imbalance[19] need to be emphasized either through curriculum or awareness programmes. Similarly, orientation for children on treatment procedure must include various option like radiation,

surgery, hormonal therapies and individual differences on side effects of treatment[19, 20]

It is very surprising and encouraging to find the children referring to psychosocial correlates of cancer that not only included certain affect states such as 'sadness' in patients but also the impact on the family. Building upon this other psychological offshoots like anger, stress, anxiety, depression and quality of life, may also be brought into their awareness.[21, 22]

Though only 2% of responses constituted misconceptions, they should be dissipated to prevent uncalled for stigma.

Implications

This study that combined the qualitative and quantitative approach may be considered as a robust method to understand children conceptualization of cancer. Further the statistical application of computing Neutralized Entropy or Divergence Index enabled very accurate calculation of conceptual complexity. The results of the study clearly indicate a developmental progression in conceptualization of cancer as a disease among children.

Limitations

One limitations of the study is restricting the sample to children coming from low socioeconomic family backgrounds. Future studies may be planned on the cross-sectional population.

Ethical Clearance: Permission was obtained from the Principals of the participating schools prior to the commencement of the study. Assent was also taken from all the participants prior to their participation.

Source of Funding: Self

Conflict of Interest: Nil

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DOI Numher: 10.5958/0976-5506.2018.01310.4

Parental Knowledge, Attitude and Practices Regarding Antibiotic use for Respiratory Tract Infections in Children

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ABSTRACT

Background: Antibiotic treatment is a prerequisite for modern healthcare and the misuse of antibiotics has become a major public health issue worldwide. The aim of the study was to determine the Knowledge, Attitude and Practices (KAP) of parents regarding antibiotic use for Respiratory Tract Infections (RTIs) in children and explore the factors associated with parents self-medicating (SM) children with antibiotics.

Method: A descriptive single centered study was conducted among 60 parents of children with RTIs attending Pediatric units of a selected hospital, Kochi. The data which include sociodemographic variables, knowledge questionnaire, attitude scale and checklist were used to assess the KAP of parents regarding antibiotic use for RTIs in children. Both descriptive and inferential statistics were used for the analysis of data.

Results: The analysis of the data revealed that most of the parents (61.7%) had average knowledge, favourable attitude (95%) and none had poor practices regarding antibiotic use for RTIs in children. The study results showed that 16.8% of the parents had self-administered medication to their children during RTIs. There was a significant correlation ($r=0.32$; $p=0.01$) between knowledge and attitude of the parents regarding antibiotic use for RTIs in children. The association between KAP with the selected demographic variables was not significant at $p< 0.05$

Conclusion: The results of the study conducted revealed that lack of complete knowledge and safe practices regarding antibiotic use still persists among the parents and some of the parents used to self-medicate their children. If appropriate antibiotic therapy is not made mandatory, it is possible that even minor infection may become threatening in the future.

Keywords: *KAP- Knowledge, Attitude and Practices, RTI- Respiratory Tract Infections, SM- Self-Medication.*

BACKGROUND

The infectious disease burden in India is among the highest in the world and respiratory infections are one of the leading causes of morbidity and mortality in children. In 2011, WHO set the theme of World Health Day as "Combat Drug Resistance", WHO calls for urgent and concerted action by governments, health professionals, industry and civil society, and patients to slow down the spread of drug resistance.[1]

Antibiotic[2] treatment is an essential requirement for modern healthcare. When antibiotics were introduced for the first time in the 1940s, they were hailed as "wonder drugs", the miracles of modern medicine. Widespread infections that killed many millions of people every year could now be cured. [1] But, frequent and inappropriate use of antibiotics can cause bacteria or other microbes to change their nature and destruction of the normal flora, allowing for selective overgrowth of antibiotic-resistant strains.

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Antibiotic resistance is one of the major public health problems especially in developing countries where relatively easy availability and higher consumption of medicines have led to a higher incidence of inappropriate use of antibiotics.[3] Centre for Disease Dynamics, Economics and Policy (CDDEP), New Delhi, done a study titled 'The State of World Antibiotics 2015' which shows that in 2010, India was the largest consumer of antibiotics ahead of China and the US. As per Global Antibiotic Resistance Partnership (GARP) - India, the public's lack of knowledge about the appropriate use of antibiotics is one of the possible reasons for antibiotic overuse and both Pediatricians and parents contribute to this problem.

Infections include Penicillin resistant streptococcus pneumonia, Methicillin resistant staphylococcus aureus (MRSA) and multi resistant mycobacterium tuberculosis are exacerbated by the misuse of antibiotics are increasing in prevalence worldwide, resulting in infections that are difficult and expensive to treat.[4] Although Carbapenems are expensive, sales in Egypt, India, and Pakistan have increased with over the counter availability.[5] There has been an increasing trend toward practicing self-medication (SM) phenomenon in both developed and developing countries in the recent years.[6] If antibiotics become ineffective, then established and newly emerging infectious diseases, which are becoming an increasing threat, may lead to emergence of antimicrobial resistance or multiple resistant organisms that would be difficult to treat, difficulty in controlling the diseases, ineffective delivery of the health care services, high morbidity rate, prolonged hospitalization period, rising the treatment costs, drug toxicity and the development of side effects.

Because of misuse and overuse of antibiotics, certain bacteria have been resistant to even the most powerful antibiotics available today. A few years ago, 10,000 units of Penicillin given four times daily for four days cured pneumococcal pneumonia.[7] Today, someone with a resistant case of pneumococcal pneumonia could receive 100 times this dose and still die from the infection. In India, along with the drug-resistant bacteria, the lack of access or delayed access to effective antibiotics leads to more deaths rates.

Children represent a population of particular concern because they have high rates of respiratory infections as well as high rates of antibiotic use with antibiotic-resistant pathogens. Children depend on their parents for medication. Parent's limited knowledge, beliefs, expectations and practices towards antibiotics is an important contributing factor in rational antibiotic use and the management of childhood illness and therefore minimizing development of antibiotic resistance. Therefore, examining the parental knowledge, attitude and practices toward antibiotic use for RTI in their children is of great value and helps in devising suitable educational interventions for them.

MATERIALS AND METHOD

A descriptive single centered study was conducted among 60 parents of children with RTIs attending Pediatric units of a selected hospital, Kochi at the time of data collection. The theoretical framework was based on the Health Belief Model. The approach used in the study was quantitative descriptive research design. Convenience sampling technique was used to select parents who met the inclusion criteria. Permission to conduct the study was obtained from the head of Pediatric department and ethical clearance certificate was obtained from the Institutional Ethics Committee. A written informed consent was obtained from all samples before starting data collection. The data collection instruments used in the study includes- a semi structured knowledge questionnaire to assess the socio-demographic data of the parents, self-administered questionnaire to assess the knowledge of parents on use of antibiotic for respiratory tract infections in children, rating scale to assess the attitude of parents on use of antibiotics for respiratory tract infections in children and a check list to assess the parental practices regarding antibiotic usage for respiratory tract infections in children and factors associated with parents self-medicating children.

RESULTS

In the present study majority of the children (40%) of the study participants belongs to the age group of 1-5 years. Half of the children (50%) were males. Majority of the parents (56.7%) belongs to the age group of 20-30 years. Almost 35% of the parents cleared higher secondary and 35% were graduates. Majority of the participants (86.7%) were mothers and 65% of the mothers were homemakers. Almost 77% of parents belonged to rural areas. More than half of children (53%) had history of frequent hospitalization. The major source of health information of majority of the parents (30%) was television.

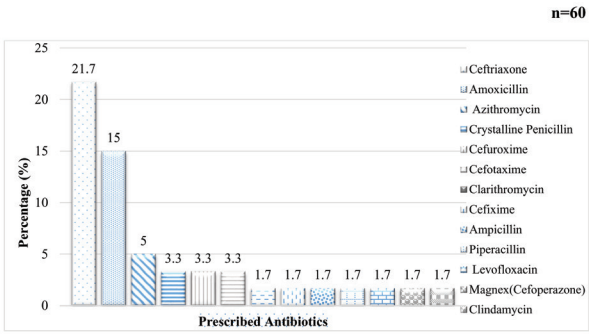

Figure 1 Percentage distribution of antibiotics prescribed to the children for respiratory tract infections.

Figure 1 shows that most of the children (21.7%) received Ceftriaxone, Amoxicillin (15%) and Azithromycin (5%).

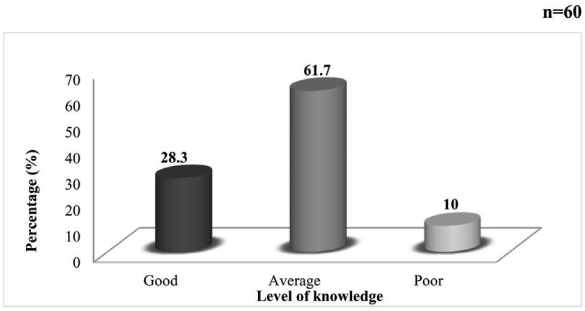

Figure 2 Percentage distribution of parents based on the level of knowledge regarding antibiotic use for respiratory tract infections in children.

The data depicted in the figure 2 shows that majority of the parents (61.7%) had average knowledge, 28.3% had good knowledge and 10% had poor knowledge regarding antibiotic use for respiratory tract infections in children.

As far as the attitude is concerned (95%) had favourable attitude regarding antibiotic usage for respiratory tract infections in children. Good practices regarding antibiotic use has been seen in majority of the parents (83.3%) whereas 16.7% had fair practices and none had poor practices regarding antibiotic usage for respiratory tract infections in children.

Table 1 Frequency and percentage distribution of factors associated with parents self-medicating children. n=10

Factors	Frequency (f)	Percentage (%)
Previous experiences with similar symptoms	4	40
Always the Pediatrician prescribes the same medication	3	30

Cont... **Table 1 Frequency and percentage distribution of factors associated with parents self-medicating children.** n=10

Lack of enough money to pay for the hospital visit	1	10
Child's condition did not seemed serious enough	1	10
The pharmacist recommended the antibiotic	1	10

Table 1 shows that out of 60 participants, 10(16.8%) were self-medicating their children. The most common reason for self-medicating their children were previous experience with similar symptoms (40%) and because the Pediatrician always prescribes the same medication (30%)

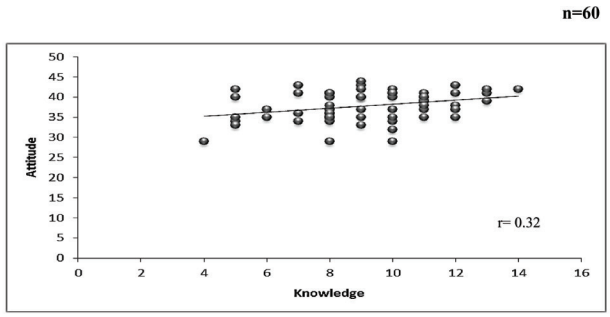

Figure 3 Scatter diagram showing correlation between knowledge and attitude of parents regarding antibiotic use for respiratory tract infection in children.

In the present study, there was a significant correlation between knowledge and attitude (r=0.32; p=0.013) (Figure 3)

DISCUSSION

The first objective of the study was to determine the knowledge, attitude and practices of parents regarding antibiotic use for respiratory tract infections in children.

Attitude and practices are the consequences of knowledge.[8] In the present study majority of the parents (61.7%) had average knowledge, favourable attitude (95%) and good practices (83.3%) with regard to antibiotic use for respiratory tract infections in children. The parents were confused about the use of antibiotics for either bacteria or virus and believed that antibiotics can be used to treat any type of infections. Only 22% of parents knew that antibiotics are used to treat bacterial infections. Interestingly, most of the parents (21.6%) identified Paracetamol as an antibiotic used to treat respiratory tract infections and fever.

Majority of parents (83.4%) identified incomplete course of antibiotic develops resistance and 65% of parents acknowledged that antibiotics have side effects, where as in a cross sectional study conducted by Teck KC [9] reported that only 23.4% of the respondents knew that antibiotics have side effects.

Almost 28% parents were in the opinion of stopping antibiotics when the child starts feeling better which is much less than the findings of Chan G C and Tang SF [10] in which 85% of the parents stop antibiotics once the children improved symptomatically. The present study revealed that only 3% parents found to have reused the left over antibiotics and shared antibiotics among their children for similar symptoms of respiratory tract infections. Some of the parents (11.7%) believed that there is no harm in following the old prescription when experiencing the same illness again.

Even though it has been widely recognized that URTIs are most often of viral etiology still antibiotics are prescribed for children with URTIs. In the present study, majority of the children (72%) had upper respiratory tract infections in which 49% of the children were given antibiotics and all children with lower respiratory tract infections received IV antibiotics. Majority of the children with lower respiratory tract infections had pneumonia (47%).

Second objective was to explore the factors associated with parents self-medicating children with antibiotics.

In the present study 16.8% parents admitted that they used to self-medicate their child during respiratory tract infections. A similar study was conducted in rural china by Yu M [11] found 62% of the parents had self-medicated their children with antibiotics.

In the present study, majority of the parents (70%) used to self-medicate their children with antipyretics (Paracetamol) for fever and cough and 30% of parents self-administered antibiotics to their children during respiratory tract infections. The main factors associated with parents to self-medicate their children were previous experiences with similar symptoms and because the Pediatrician always prescribes the same medication. This study findings were supported by a cross sectional descriptive study conducted by Jasim AL[6] and found around 41.1% of the parents practice self-medication and the main reason of self-medication was dealing with same current ailments previously.

Third objective was to find the correlation between knowledge, attitude and practices of parents regarding antibiotic use for respiratory tract infections in children.

The study results shown that there was a significant correlation (r=0.32; p=0.013) between knowledge and attitude of parents regarding antibiotic use for respiratory tract infections in children. Similar results were obtained by Moustafa Mohamed S M [5] among 60 mothers in Egypt and found a positive correlation between mother's knowledge and their attitude towards the use of antibiotics in their children with URTI.

Fourth objective was to find the association of parental knowledge, attitude and practices with the selected demographic variables.

The average age of the child of the participants was 4.43 years with standard deviation 3.40. The association between knowledge, attitude and practices with the selected demographic variables like age and gender of the child, parental age, relation with the child, educational level, occupation, number of children, area of residence was not significant at $p<0.05$. Panagakou SG[12] identified that being a father, having low education and being without experience in recurrent URTIs were significantly associated to inadequate knowledge, inappropriate attitudes, and wrong practices.

Most of the parents of children with frequent hospitalization had lack of adequate knowledge regarding proper use of antibiotics. Hence, parents need to be well informed regarding the child's disease, ways to prevent RTIs and safe use of antibiotics.

Fifth objective was to develop a pamphlet regarding safe use of antibiotics which can be distributed.

For any educational intervention to be successful and for the changes to be sustained, it should change the knowledge, attitudes and practices (KAP) of the target group.[13] In the present study, a pamphlet was prepared on the basis of the study findings to provide more information to parents regarding safe use of antibiotics. It includes points to be followed for safe use of antibiotics, need of antibiotics, antibiotic resistance and ways to prevent from getting an infection. Various studies conducted previously also suggested that parental

educational interventions will be effective to promote rational and safe use of antibiotics.

CONCLUSION

The results of the study conducted revealed that majority of the parents had average knowledge, favourable attitude and none had poor practices regarding antibiotic use for respiratory tract infections in children, but still lack of complete knowledge and safe practices regarding antibiotic use persists among the parents and some of the parents used to self-medicate their children. Simple methods to avoid infections and practice safe antibiotic use such as practicing hand hygiene, appropriate use of prophylactic antibiotic, avoiding self-medication and restrictions on unnecessary prescriptions may go a long way in preventing antimicrobial abuse. Finding of the study would help the public, health professionals and students to identify areas of limited knowledge, attitude and practices to devise suitable educational interventions for the public to practice prudent and rational use of antibiotics.

LIMITATIONS

As the researcher used convenience sampling technique to conduct the study, majority of the participants selected were mothers and the proportion of fathers were very minimal. This minimizes the generalizability of the findings.

Conflict of Interest: Nothing specific- can use the study findings with proper citation of authors name.

Source of Funding: Self-finance

Acknowledgment: Nil

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DOI Numher: 10.5958/0976-5506.2018.01311.6

Informal Healthcare Providers in India : Illegal and Indispensable

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ABSTRACT

The corresponding author who served in Supaul district of Bihar state of India as an Acute Flaccid Paralysis(AFP) Surveillance Medical Officer(SMO) with the World Health Organisation between May 2011 and July 2013,observed that the district had a preponderance of quackery. A look at the public healthcare system in the district with a population of 2.2 million shows just why this situation exists. According to the latest data available on government websites, the shortfall of Health Sub Centres, Primary Health Centres and Community Health Centres in Supaul district is an astonishing 58%,87% and 88% respectively. These numbers are not significantly different from the numbers for the rest of the state of Bihar. There is no evidence of any political will to tackle this shocking shortfall. The Bihar government has actually reduced the allocation to health for the financial year 2017-18 to Rs.7001.52 crore from Rs.8234.70 crore in 2016-17. Estimates say 70 to 80 percent of healthcare providers in India are informal providers. This ratio can go upto 30 informal providers for every public sector doctor in certain rural areas. Upto 75 percent of primary care visits in rural areas can be to an informal provider. If we must have equitable access to healthcare in India, it would be imperative to involve these informal providers.

Keywords : *Supaul, Bihar, Surveillance Medical Officer, quacks, informal health providers*

INTRODUCTION

Sustainable Development Goal no.3 of the United Nations Development Programme(UNDP) is "Good Health and Well Being". An important aspect of ensuring Good health and well being is access to healthcare. The corresponding author who served in Supaul district of Bihar state of India as an Acute Flaccid Paralysis(AFP) Surveillance Medical Officer(SMO) with the World Health Organisation between May 2011 and July 2013,observed that the district had a preponderance of quackery. The Supreme Court of India defines a quack as a "person who does not have knowledge of a particular system of medicine but practices[it] and [is] a mere pretender of medical knowledge or skills."[1] The SMO office for AFP surveillance relied on a network of healthcare providers to report cases of AFP. More than 80% of the 200 odd healthcare providers on the list operative for Supaul district were quacks(hereafter referred to as informal providers).And this was not a comprehensive list either. There were many more,but the SMO office listed only the more popular ones who were most likely to see cases of AFP.A few km from the district administrative and law enforcement headquarters, informal provider clinics abounded, on the highway that runs through the district, with several more such clinics in the villages on either side of the highway. The main reason for this is the abject failure of the government to ensure access to safe healthcare, primary or otherwise. Almost all of the few qualified doctors in the district worked in the very small district headquarters (which was relatively urbanised) while the

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people of the hinterland had to fend for themselves.

A look at the public healthcare system in the district with a population of 2.2 million shows just why this situation exists. According to the latest data available on government websites, the shortfall of Health Sub Centres, Primary Health Centres and Community Health Centres in Supaul district is an astonishing 58%,87% and 88% respectively.[2,3,4,5] These numbers are not significantly different from the numbers for the rest of Bihar.[6] Even among the health centres that are functioning, a plethora of issues exist:shortage of manpower; irrational allocation of manpower; irrational location of health centres; absence of list of drugs; lack of permanent infrastructure, hygiene, own communication system, residential facilities, regular electricity, waste disposal facility, borewell, piped water supply, separate examination room, clinic room, labour room, boundary wall, furniture or equipments.[7]

Table 1 illustrates the gap in public health infrastructure between the Indian Public Health Standards(IPHS) recommended centre:population ratios and the actual centre:population ratios in Supaul district of Bihar state of India.[2,3,4,5]

Table 1. A comparison of the recommended and actual ratios of Sub centres, Primary health centres and Community health centres in Supaul district of Bihar state of India.

	Sub centres	Primary health centres	Community health centres
Recommended ratio as per Indian Public Health Standards (IPHS)- centre:population	1:5000	1:30,000	1:120000
Expected number of centres	425	71	18
Actual number of centres	178	9	2
Actual ratio - centre:population	1:11,930	1: 235,946	1:1,061,759
Percentage shortfall	58%	87%	88%

The Bhore committee of pre-independent British India had, in 1946, recommended Primary Health Centres(PHCs) for every 40,000 population. This was supposed to be only a short term measure. The committee envisaged the scaling up of the number of PHCs till it reached a ratio of one PHC for every 20,000 population.(8)70 years of independence later, we have PHCs for every 235,000 population(2,123,518 rural population/9 PHCs) in Supaul, each PHC thus serving more than ten times the population that it was originally intended to serve. Nothing can be a bigger indictment of the government's attitude to healthcare.

There is no evidence of any political will to tackle this shocking shortfall. When The Telegraph was doing a story on the sorry state of public health services in Bihar, calls to the health minister went unanswered. The deputy secretary of the health department, referring to the Union statistics and programme implementation ministry's National Sample Survey Office(NSSO) data, told The Telegraph: "I have not come across any such data compilation, I am unaware of this data."[6] The shortfall of health centres does not seem like it will change very soon anytime in the future, given that the Bihar government has actually reduced the allocation to health for the financial year 2017-18 to Rs.7001.52 crore from Rs.8234.70 crore in 2016-17.[9]

Estimates say 70 to 80 percent of healthcare providers in India are informal providers, with the political capital Delhi having 2 informal providers for each of its 40,000 registered doctors.[10] This ratio can go upto 30 informal providers for every public sector doctor in certain rural areas[11]. Upto 75 percent of primary care visits in rural areas can be to an informal provider[11]. If we must have equitable access to healthcare in India, it would be imperative to involve these informal providers. There has been stiff opposition from the Indian Medical Association(IMA)[12] to any attempts at the possible legitimisation of these informal providers, but given how interwoven they are with their communities, the popular support and political patronage that they enjoy, the fact that in many settings patients trust them more than public sector doctors and India's abject failure at

building a half-way decent public healthcare system, it is becoming increasingly obvious that training and regulating these informal providers is the only way forward[11,13]. Das et al, in a study published in Science, concluded that training informal providers increased correct case management rates. Further, training did not lead informal providers to violate rules with greater frequency or worsen their clinical practice, both of which are concerns that have been raised by the Indian Medical Association(IMA).The findings suggested that multitopic medical training may offer an effective short-run strategy to improved health care provision and complement critical investments in the quality of public healthcare.[11] With this being the case,it would be beneficial if informal healthcare providers were provided with training that would eliminate the most common medical errors that they make and enable them to provide a certain minimum level of care.

CONCLUSION

In Supaul the corresponding author saw that they had formed associations and held official meetings periodically. They had elected office bearers. These informal providers are doing something which by its very definition is illegal but we believe is indispensable in the current Indian healthcare landscape. If they have the capacity to organise themselves so well, it would be reasonable to believe that they would be receptive to inputs that would enhance their skill levels, resulting in a higher quality of healthcare delivery. Informal providers treat millions of patients every day in India. There is simply no wishing them away, no matter what the IMA or anyone else feels. This is especially so in geographies that simply do not have enough qualified medical practitioners. Given that there is almost no political will to do anything substantial to increase access to healthcare, we fail to see any other alternative to training and capacity building of the informal providers. The sooner that the authorities realise this and draw up a comprehensive plan for them, the sooner we will see an increase in equitable access to a better standard of healthcare across the Indian hinterland.

Ethical Clearance: As this was a literature review based opinion piece, ethical clearance is not a prerequisite, and hence was not sought.

No Funding

No Conflict of Interest.

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DOI Numher: 10.5958/0976-5506.2018.01312.8

Premenstrual Symptoms and Lifestyle Factors Associated with it among Medical Students

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ABSTRACT

Background: Premenstrual symptoms are a constellation of somatic and emotional symptoms commonly affecting women in reproductive age group. Apart from causing physical, emotional distress, they can influence daily activities and reduce productivity of women.

Objective: To determine the prevalence of premenstrual symptoms and lifestyle factors associated with it among medical students.

Methodology: This cross sectional study was conducted among 209 medical students and interns of a private medical college. A self-administered questionnaire was used to assess menstrual history, premenstrual symptoms and diet. Physical activity was assessed using International Physical Activity Questionnaire.

Results: The median (IQR) age of the study participants was 21(20, 22). Feeling of tiredness (30.6%) and presence of mood swings (25.4%) reported by at least a quarter of the study participants were the major somatic symptom and emotional/behavioral symptoms respectively. On univariate and multivariate analysis, coffee consumption was positively associated with premenstrual symptoms [Adjusted OR=1.85, 95% CI =1.02-3.34, p=0.042]. Though statistically not significant, a higher proportion of those with premenstrual symptoms were physically inactive as compared to those without symptoms (39.7% Vs. 35.2%).

Conclusion: Excessive caffeine intake and physical inactivity can have an influence on premenstrual symptoms. Adopting healthy lifestyle could positively help the medical students to reduce the impact of premenstrual symptoms on their social activities and interpersonal relationships and increase their productivity.

Keywords: *Premenstrual symptoms, diet, physical activity*

INTRODUCTION

Premenstrual symptoms, are physical and emotional changes which appear in the body in relation to menstrual cycle. They usually begin within 5 days from and resolve within 4 days after onset of menstrual bleeding. [1] Studies have shown that over 80% of women in reproductive age group suffer from premenstrual symptoms.[2] Premenstrual symptoms possibly have a multifactorial etiology including abnormal serotonin function, presence of progesterone, exercise habits, smoking, alcohol consumption, use of caffeinated beverages.[3] However, the exact etiology of premenstrual symptoms still remains unclear. Premenstrual symptoms affect women across all the social classes. Interestingly, studies in different countries have shown that premenstrual symptoms are more common and of severe nature in high level educated women and this is possibly

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attributed to higher stress among them. [4,5] As medical students are generally under tremendous academic pressure, the added stress due to premenstrual symptoms could affect their daily activities and interpersonal relationships. Hence, the present study was conducted to evaluate the association between lifestyle factors and premenstrual symptoms.

METHODOLOGY

A cross sectional study was conducted among first to final year medical students and interns of a private medical college. Anticipating the prevalence of premenstrual symptoms to be 51.2% [6], relative precision of 15% and non-response rate of 20 %, the sample size was estimated to be 204. The study included participants having regular menstrual period for at least last 3 months. Participants with history of diabetes, hypertension, anxiety/depression or on hormonal therapy were excluded. A self-administered questionnaire was given to all participants to collect details of age, menstrual characteristics, premenstrual symptoms and diet.

Definitions used in the study:

Pre Menstrual Symptom: somatic or emotional/ psychobehavioural symptom that

Begins at least 5 days before/resolves within 4 days of onset of bleeding

Interferes with some of the normal activities

Present for at least 3 consecutive menstrual cycles.

Regular menstruation: Menstrual bleeding which occurs in equal intervals between 21 and 35 days. [7]

Amount of bleeding: Depending on the number of pads used per day as:-

- Little: (<4 pads/day),
- Moderate: (5–10 pads/day)
- Heavy: (2 pads at a time) [8]

Disorders of menstruation:

Menorrhagia: Cyclic regular bleeding excessive in amount or duration. If, duration of bleeding is more than 6 days/menstrual flow is heavy throughout the bleeding.

Polymenorrhea: Cyclic menstrual cycles, lasting less than 21 days.[7]

Oligomenorrhea: Cyclic menstrual cycles, lasting more than 35 days. [7]

Hypomenorrhea: Cyclic menstruation, with less than 2 days of active bleeding and scanty blood loss. [7]

Anthropometric measurements such as weight and height were recorded. Body Mass Index (BMI) was calculated and classified based on Indian classification. [9]

The International Physical Activity Questionnaire (IPAQ) was used to assess physical activity of the participants and is classified as Inactive, Minimal active and Health Enhancing Physical Activity (HEPA). [10]

Data was analyzed by using the Statistical Package of the Social Science (SPSS) software for Windows, version 15. Categorical variables have been expressed as proportions. Median (IQR) has been reported for continuous variables. Univariate and multivariate analysis was done to find association between premenstrual symptoms and lifestyle factors associated with it. Unadjusted and adjusted odds ratio (OR) with 95% confidence interval (CI) have been reported. A p value <0.05 was considered to be statistically significant.

RESULTS

The study included 209 female medical students from first to final year and interns. Table 1 describes the baseline characteristics of the study participants. Median (IQR) age of the study participants was 21(20, 22) and the median (IQR) age at menarche was 12 (12, 13) yrs. The median (IQR) duration of menstrual cycle was 29(28, 30) days and the median (IQR) duration of bleeding was 5(4, 5) days. As per the number of pads used per day, 206(98.6%) of them had little bleeding (<4 pads/day) and 3(1.4%) had moderate bleeding (5-10 pads/day). Menorrhagia (bleeding >7days) and oligomenorrhoea was seen in 9.1% and 1.9% respectively among the study participants. None of the participants were found to have polymenorrhoea or hypomenorrhoea. The mean (SD) BMI among the study participants was 22.6(4.4) kg/m^2.

Table 1. Baseline information of the study participants (n=209)

Variables	Category	n (%)	Variables	Category	n (%)
Age (yrs)	18-20	86(41.1)	**Junk food consumption**	< 1-3 per month	40(19.1)
	>20	123(58.9)		At least once per week and more	169(80.9)
Age at menarche (yrs)	9-12	115(55.0)	Eating raw vegetable / fresh fruit	< 1-3 per month	26(12.4)
	13-18	94(45.0)		At least once per week and more	183(87.6)
Duration of cycle (days)	21-35	205(98.1)	**Skipping meals**	< 1-3 per month	94(45.0)
	35-40	4(1.9)		At least once per week and more	115(55.0)
Duration of bleeding (days)	2-3	21(10.0)	**Coffee consumption**	< 1-3 per month	82(39.2)
	4-6	169(80.9)		At least once per week and more	127(60.8)
	7	19(9.1)	**Tea consumption**	< 1-3 per month	115(55.0)
BMI kg/m^2	<22.9	135(64.6)		At least once per week and more	94(45.0)
	>23	74(35.4)	**Physical activity**	Inactive	79(37.8)
Type of diet	Vegetarian	87(41.6)		Minimal active	47(22.5)
	Nonvegetarian	122(58.4)		HEPA	83(39.7)

Table 2. Premenstrual symptoms among the study participants (n=209)

Symptom	n (%)	Symptom	n (%)
Felt sad/ depressed	39(18.7)	Increased appetite	23(11.0)
Felt hopeless	15(7.2)	Food craving	7(3.3)
Felt worthless/guilty	14(6.7)	Increased sleep	19(9.1)
Felt anxious	25(12.0)	Had trouble getting to sleep/staying asleep	7(3.3)
Presence of mood swings	53(25.4)	Felt difficult to cope	20(9.6)
Being sensitive	29(13.9)	Felt out of control	12(5.7)
Anger, irritability	42(20.1)	Breast tenderness	18(8.6)
Having conflicts/problems with people	24(11.5)	Weight gain	23(11.0)
Having less interest in usual activities	24(11.5)	Headache	23(11.0)
Difficulty in concentrating	32(15.3)	Had joint/ muscle pain	54(25.9)
Felt tired	64(30.6)		

Proportion of study participants having any premenstrual symptoms was 121(57.9%). As shown in table 2, feeling tired (30.6%) was the most common and having food cravings (3.3%)/sleep disturbances (3.3%) were the least prevalent symptoms.

About 73 (34.9%) of the study participants reported that premenstrual symptoms reduced their productivity.

Interference to participating in social activities was said to be an issue of concern by 68(32.5%) of the study participants. One fifth (21.1%) of the study participants stated that premenstrual symptoms affected their relationship with others.

Table 3. Association between menstrual characteristics, lifestyle factors and presence of any premenstrual symptom among the study participants on Univariate analysis (n=209)

Variables	**Category**	**Premenstrual symptom present**	**Premenstrual symptom absent**	**OR 95% CI**	**p value**
Age (yrs)	18-20	45(37.2)	41(46.6)	1	
	>20	76(62.8)	47(53.4)	1.47(0.84-2.57)	0.17
Age at menarche (yrs)	9-12	71(58.7)	44(50.0)	1	
	13-18	50(41.3)	44(50.0)	0.7(0.40-1.22)	0.21
Duration of cycle (days)	21-35	118(97.5)	87(98.9)	1	
	35-40	3(2.5)	1(1.1)	2.21(0.22-21.62)	0.49
Duration of bleeding (days)	2-3	12(9.9)	9(10.2)	1	
	4-6	98(81.0)	71(80.7)	1.03(0.41-2.58)	0.94
	7	11(9.1)	8(9.1)	1.03(0.29-3.61)	0.96
BMI (kg/m²)	<22.9	81(66.9)	54(61.4)	1	
	>23	40(33.1)	34(38.6)	0.78(0.44-1.39)	0.405
Type of diet	Vegetarian	56(46.3)	31(35.2)	1	
	Nonvegetarian	65(53.7)	57(64.8)	0.63(0.35-1.11)	0.11
Junk food consumption	< 1-3 per month	23(19.0)	17(19.3)	1	
	At least once per week and more	98(81.0)	71(80.7)	1.02(0.50-2.04)	0.95
Eating raw fruit/ vegetable	< 1-3 per month	15(12.4)	11(12.5)	0.99(0.43-2.27)	0.98
	At least once per week and more	106(87.6)	77(87.5)	1	
Skip meals	< 1-3 per month	57(47.1)	37(42.0)	1	
	At least once per week and more	64(52.9)	51(58.0)	0.81(0.46-1.41)	0.46
Coffee consumption	< 1-3 per month	40(33.1)	42(47.7)	1	
	At least once per week and more	81(66.9)	46(52.3)	**1.84(1.05-3.25)**	**0.03**
Tea consumption	< 1-3 per month	69(57.0)	53(60.2)	1	
	At least once per week and more	52(43.0)	35(39.8)	0.64(0.65-1.99)	0.64
Physical activity	Inactive	48(39.7)	31(35.2)	0.97(0.51-1.82)	0.92
	Minimal active	22(18.2)	25(28.4)	0.55(0.26-1.11)	0.108
	HEPA	51(42.1)	32(36.4)	1	1

On univariate analysis, coffee consumption at least once a week and more was 1.84 times more likely to be associated with premenstrual symptoms as compared to those without premenstrual symptoms and this difference was statistically significant (95% CI 1.05-3.25, p=0.03) . Though statistically not significant, a higher proportion of those with premenstrual symptoms were physically inactive as compared to those without symptoms (39.7% Vs. 35.2%).

Variables with p value of <0.2 on univariate analysis were included in multivariate analysis. Following multivariate analysis, coffee consumption at least once a week or more was independently associated with premenstrual symptoms [Adjusted OR=1.85, 95% CI =1.02-3.34, p=0.042]. Age of the study participants, age at menarche, type of diet and physical activity didn't show any association with presence of premenstrual symptoms.

DISCUSSION

The findings of the present study suggest that premenstrual symptoms are common among medical students. A lower prevalence of premenstrual syndrome was found in studies among medical students by Rumana AM et al (31.1%)[11]and Balaha MH et al (36.5%)[12] which was in contrast to the present study. However, studies by Karout N et al [13] (54.1%) and Nisar N et al[14] (51%) reported prevalence which was coherent with the present study findings.

Charu S et al reported that average duration of cycle was 29.5±3.3 days and mean age at menarche to be 12.6±1.1 yrs which is in line with the median duration of menstrual cycles and age at menarche reported in the current study. In the present study 98.1% of study participants had menstrual cycles with a duration of 21-35 days which was similar to findings by Charu S et al (97.2%). [15]

While the study by Seedhom et al [16] found the mean(SD) BMI of medical students to be 24.1(±4), higher than present study, results from Charu S et al [15] reported a mean (SD) BMI of 21.6(3.2) which was similar to the findings of the present study.

The type of premenstrual symptoms reported and their proportions varied to a great extent across studies. Kaur N et al found that a higher proportion of participants to have the premenstrual symptoms such as irritability (64.5%), fluctuation of mood (59.2%), breast tenderness (42.3%) and difficulty in concentration (41.9%) among nursing students as compared to the present study.[17] Another study by Aref N et al found that the frequency of menstrual symptoms among medical students with respect to breast pain (54%), change of mood (54%), food craving (52%), and headache (25.9%) which are much higher than current study findings.[18] Observations from the study by Kural M et al among 18-25 year old college going students showed that prevalence of breast pain, irritability, fatigue, anxiety and emotional disturbances to be 16.3%, 42.9%,23.4%, 10.3% and 29.8% respectively. [19] Another study by Nisar N et al reported that the top three symptoms among medical students were found to be anger/irritability (83.8%), anxiety (81.8%) and feeling tired (78.7%).[14] These observations are in contrast to the present study findings.

Though menstruation is a physiological phenomenon, premenstrual symptoms can have influence on daily activities of women in the reproductive age group. A study by Nusrat Nisar N et al reported that premenstrual symptoms affected the productivity among 55.5% of the participants as compared to 34.9% in the present study. [14] The same study also reported that two third (64.6%) of study participants to have said that premenstrual symptoms affected their relationship with others which is in contrast to the present study (21.1%). [14]

While consistent associations have been found between certain variables such as excess coffee consumption and consumption of junk and sweet foods and premenstrual symptoms, contrasting results have been seen with physical activity, and BMI. A study by Sahin S et al found that consumption of coffee (OR=1.84), Salty foods (OR=1.92), consuming oily foods (OR=2.4) and regular exercise (OR=1.7) were associated with premenstrual syndrome. [20] Association with coffee consumption mentioned in the earlier study is line with the present study. Another study by Seedhom AE et al found that physical inactivity, consumption of sweet tasting food items and fast food, decreased intake of vegetables and fruits and excess consumption of caffeinated beverages were associated with premenstrual syndrome. [16] While the study by Seedhom AE et al [16] found that frequency of premenstrual syndrome was lower among those who were overweight/obese, Masho M et al [21] observed that obesity was a risk factor for premenstrual syndrome. However no such pattern was observed in the present study.

Since this was a cross sectional study, the causality between factors studied and premenstrual symptoms could not be established.

CONCLUSION

Lifestyle factors such as diet and physical activity can have an influence on premenstrual symptoms. Reduction in consumption of caffeinated beverages and increasing the physical activity are advisable to students in this context. As medical students are under a lot of academic stress, the added strain due to premenstrual symptoms could affect their productivity. Incorporation of healthy dietary practices and an exercise plan as a part of daily routine is desirable.

Conflict of Interest: Nil

Source of Funding: Nil

Ethical Clearance: Institutional Ethics Committee clearance was obtained. Informed consent has been taken from the study participants.

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DOI Numher: 10.5958/0976-5506.2018.01313.X

Impact of Biomedical Waste Management Training Intervention on Knowledge, Attitude and Practices of Health Care Workers in Telangana

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ABSTRACT

Background: About 80 percent of total waste generated in healthcare activities is a general waste but the remaining 20 percent of it involves toxic, infectious and radioactive waste and 20 percent of this non general biomedical waste is highly dangerous and can be a serious threat to the community and the environment if it is not segregated disposed of adequately.

Objective: To assess the knowledge, attitude, and practice toward handling of biomedical waste among healthcare workers, before and after an educational intervention.

Materials and Method: An interventional study conducted at a Medical college in Telangana. 100 respondents were taken, which includes nurses, class IV workers, junior residents and doctors. An identical pre and post-training questionnaire was designed which was pre-tested & semi-structured

Data were collected between June to August. Statistical analysis was carried out by using SPSS version 22 using chi-square test.

Result: Significant improvement was seen about the knowledge of biomedical waste management after the intervention. Bio-medical waste disposal p value was found to be highly significant (p= 0.00001)

Conclusion: Knowledge, attitude, and practice have significantly improved after post intervention given in the form of workshop.

Keywords: *Biomedical waste, knowledge, attitude, practice, health care workers.*

INTRODUCTION

Biomedical waste is defined as any solid or liquid waste generated during diagnosis, treatment or immunization of human beings and animals or during research that may present a threat of infections to humans. [1] In India, the legislation governing BMW management is called as Bio-Medical Waste (Management and Handling) Rules, 1998 [2] and has been promulgated under Environment (Protection) Act, 1986 [3]. There are primarily 4 broad functions for BMW management at source of generation, viz. placement of waste receptacles or bins lined with waste bags at source of generation, segregation of waste, mutilation of recyclable waste and disinfection of waste [2,4, 5]

A total of 80% of the waste generated in the hospitals is composed of general waste while the remaining 20% comprises of infectious, toxic or radioactive waste. [6] The waste generated in the hospital has significant health impact not only on the healthcare workers but also on the general public. Improper handling of waste not only poses significant risk of infection due to pathogens like HIV, Hepatitis B & C virus but also carries the risk of water, air & soil pollution thereby adversely affecting the environment and community at large.[7,8]

Poor management of health care waste potentially exposes health care workers, waste handlers, patients and the community at large to infection, toxic effects and injuries, and risks polluting the environment. It is essential that all medical waste materials are segregated at the

point of generation, appropriately treated and disposed of safely. Trainings of health workers have been proven to be one of the most effective strategies for improving the practices and health behavior, especially when combined with other innovative approaches [9,10] It has been shown that regular trainings of healthcare workers could improve their practices of waste management at their work places. [11] Trainings of healthcare workers are essential to improve their behavior towards hospital waste management. [12]

MATERIAL AND METHOD

Study design: Hospital based Cross sectional study

Study area: MNR Hospital ,Sangareddy

Study period: Jun2017 – Aug2017

Sampling technique: Stratified random sampling technique.

Study population: Total 100 respondents were taken, which includes nurses, class IV workers, Junior residents and doctors.

From each department of hospital four staff members consisting of one doctor, one nursing staff, one junior resident and a class IV worker were selected randomly.

An identical pre and post-training questionnaire was designed which was pre-tested & semi-structured and also validated by a pilot survey. They were administered to the above mentioned staff.

Prior permission from the concerned authorities and oral consent from the respondents was obtained.

Health care workers were administered the pre-tested questionnaires and were asked to answer to the best of their knowledge and practice.

After pretest questionnaire, a workshop was conducted by the department of community Medicine about biomedical waste management.

At the end of the workshop the post test was conducted. Both the pre and post-test questionnaire were evaluated. The participants were divided according to their departments. For 1 week workshop was conducted as per availability of health care workers

RESULTS

Table 1: Distribution of health care workers according to age

Characteristics	**Number (N=100)**
20-25	45
26-30	20
31-35	15
36-40	5
>41	15
Total	**100**
Male	37
Female	63
Total	**100**

Table 1 shows most of health care workers were belonging to >41 yrs age group

Table no 2: Pre and post test evaluation of health care workers

Variables	**Pre-test**		**Post-test**		**X^2 value**	**P- value**
	Aware	Unaware	Aware	Unaware		
Health hazards due to improper Bio-medical waste management	75	25	91	9	9.07	0.00259
Segregation of Bio-medical waste	36	64	95	05	77.02	0.00001
Color coding system	55	45	94	6	40.03	0.00001
Protective measures for staff of Bio-medical waste	83	17	90	10	2.08	0.147
Various types of Bio-medical waste produced	63	37	92	8	24.11	0.00001

***Cont...*Table no 2: Pre and post test evaluation of health care workers**

Treatment of Bio-medical waste	70	30	94	6	19.51	.00001
Bio-medical waste disposal	51	49	85	15	26.56	.00001
Management & handling rules of Bio-Medical waste	60	40	84	16	14.28	0.0001

Table 2 shows pre and post test evaluation of health care workers. There was statistically significant difference between pre and post test evaluation ($p<0.05$) except for protective measures for biomedical waste management in which it was not significant. ($p > 0.05$)

DISCUSSION

This study was done to assess to the knowledge of Bio-medical waste management and to evaluate impact of intervention training programme. In our study 70% health care workers were aware of biomedical waste management. Another study by Bhagwat et al[13] found that only 70.6% health-care workers were aware of biomedical waste management which is similar to our study. A study by Margabandu and Balasubramaniam[14] among nurses showed that 94% of them had knowledge regarding health-care waste management which is different from this study. The knowledge of Bio-medical waste management was poor in many areas before the workshop may be due to inadequate training. A study conducted by Sain S e tal[15] in a tertiary hospital showed that 85% of the nurses had knowledge about Bio-medical waste management.The effective knowledge might be because of prior training or higher literacy.

In the present study, there is increase in knowledge of health hazards due to improper management of Bio-Medical waste such as transmission of HIV/AIDS, Hepatitis B etc. after workshop and it is statistically significant. Pandit et al[16] in their study found that Paramedical staff had poor knowledge about health hazards which is similar to our study.

The segregation of Bio-medical waste at the point of generation is very important for the disposal of waste. This study showed that the knowledge about segregation of Bio-medical waste was very less (only 36%) among the participants. After training session the knowledge was significantly increased and was found to be statistically significant. The study done by Madhukumar S and Ramesh G[17] at Bangalore showed that 87.5%of the study subjects were in favor of segregation.

The study revealed that more than half (54.92%) of the study subjects were unaware about color coding of Bio-medical waste. After training the awareness was raised to 80.33% and the increase was found to be statistically highly significant. In one of the study by Asadulla et al[18] it was found that only 28.9% of the nurses had complete knowledge regarding color coding and different categories of Bio-medical waste.

The present study observed that nearly half (48.36%) of the participants were not having knowledge about the precautions taken while handling Bio-medical waste. The study also showed that 60 % of the subjects did not know about the Bio-Medical waste (Management & handling) rules before the training and the knowledge was significantly increased to 84 % after having training and was found to be statistically highly significant. Similar findings were reported in the study conducted in Bhopal by Bathma et al[19] showed that 54.5% of nurses were aware about the existence of BMW management and handling rules 1998 (2012).

CONCLUSION

From the assessment of knowledge of categorizing as biomedical waste, all areas were improved. Knowledge regarding the color of bins was good. In addition, with training there was improvement. More focus can be placed in areas where the students are always confused about choosing the right colored bins. Emphasis needs to be placed among health care workers that waste is not mixed up in the end and that great measures are taken to ensure the proper transportation and disposal of the biomedical waste.

Conflict of Interest – None

Source of Funding-Self

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DOI Numher: 10.5958/0976-5506.2018.01314.1

Evaluation of Knowledge, Attitude and Practice on First Aid Measures among Students

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ABSTRACT

Objective: The main aim of the first aid is to save the life, prevent degradation of the situation and to promote the recovery. The adequate knowledge on first aid can promote the chances of survival of the injured person. This study was conducted to assess the knowledge, attitude and practice of secondary school and intermediate students towards the first aid.

Method: It is a prospective study conducted in randomly selected secondary schools and intermediate colleges of Piler Mandal, Chitooor District, Andhra Pradesh for a period of 3 months) by using a validated questionnaire which consists of 28 questions to assess their knowledge, attitude and practice about first aid. All statistical analyses were performed using Microsoft Excel 2010 and Graph Pad Prism 7.0 software.

Results and discussion: The goal of first aid is to preserve life, prevent further injury and promote recovery. Statistically significant difference was not found in the knowledge (P=0.6204), attitude (P=0.2351) and practice (P=0.9508) among secondary school and intermediate students about first aid measures.

Conclusion: The knowledge, attitude and practice of secondary school and intermediate students on first aid was found to be adequate but still it is the responsibility of each and every school to provide training on first aid measures and also to have fire extinguisher in their school campus.

Keywords: *Practice, First aid, Knowledge, Attitude*

INTRODUCTION

First aid is the emergency care provided immediately to an injured person by a trained medical or non- medical person till a medical attention is sought[1].The main aim of the first aid is to save the life, prevent degradation of the situation and to promote the recovery [2].Often, the first action taken for management of injuries and common illness decides the future course of disease and complication rates [3].The importance of training persons in first aid at earlier stages of their career is now coming into practice worldwide. Since, Students have the potential for changing the health scenario of the society if properly groomed and educated for healthful living[4,5]. It was mentioned that making the students to learn about first aid with in the schools will probably decrease the cost of saving lives[6]. The adequate knowledge on first aid can promote the chances of survival of the injured person [7]. Since, school is the place where children spent most of their time, by learning the new things and upgrading themselves. Apart from their studies they are involved in many extra-curricular activities which are meant for their physical and mental development in a healthy way. Most common activities in which children involved are bicycle riding, swimming, and playing games. But during these activities the children are most endangered to get injured physically [8, 9]. It is stated in a study that 88% injuries in children are physical and almost 20% of those injuries were occurred only during their school hours [10]. The unfortunate incidents occurring at the schools during the extra-curricular activities are leading to serious injuries compared to the non-school incidents [11]. If these injuries are left as such, the state of heath of the child may be worsened [4]. So it is the responsibility of health care professionals to create awareness and conduct training program in schools on first aid to protect the children from worsening of condition which occurs due to

injuries till they seek medical attention. Moreover, it was stated that the proper first aid measures may sometimes result in avoiding the physician consultation. But to provide first aid in a correct way, the provider should have some basic knowledge and experience on it in order to minimize the injury and to save the life .Hence, it is important for each and every individual to have some basic knowledge on first aid in order to save the injured person till the medical consultation is available [12, 13]. According to National Science Advisory Board (NSAB), it is the duty of every individual to learn and practice the first aid [14]. Hence, school is an appropriate place for initiating teaching and training activities on life saving first aid skills [15]. Even though many trainings and awareness camps have been conducted on first aid, people are not ready to assist the injured persons who need medical attention by providing first aid, since they are fear of committing some mistakes while doing first aid measures [16]. On account of first aid significance in school, all the schools should be equipped with the basic facilities to provide first aid. Hence, this study was conducted to assess the knowledge, attitude and practice of secondary school and intermediate students towards the first aid.

METHODOLOGY

Study Design and Data Collection

It is a cross-sectional, comparative study conducted in randomly selected secondary schools and intermediate college of Piler Mandal, Chitooor District, Andhra Pradesh for a period of 3 months (June to August, 2017). The Institutional Ethics Committee of RVS Institute of Medical Sciences approved this study (Approval No: IEC/RVSIMS/2017/01) and also we have taken permission from Piler Mandal Educational Officer to conduct this study. A comprehensive plan of the study was described to the Principal of Secondary School and Intermediate College and their consent was taken prior to discussion with students. Consent was also taken from the students participating in the study. A validated questionnaire which consists of 28 questions (18-knowledge oriented, 5- attitude oriented and 5-practice oriented) was used to assess their knowledge, attitude and practice about first aid. The frequent incidents which need first aid like external bleeding (including epistaxis), choking, snake bite, burns, fits etc., were assessed. 600 Students (300 from secondary school and 300 from intermediate college) were included in this study. The validated questionnaire was issued to the students and sufficient time was given to the students to answer the questionnaire. Verbal consent was obtained from each student during data collection. The confidentiality of the data obtained was assured and the personal details of the student were omitted from the questionnaire. While collection of questionnaire, the students were asked for any unclear ideas in the questionnaire, checked for any unfilled information and education and training regarding first aid was provided to the students.

Statistical Analysis

The collected data was tabulated and analyzed using Microsoft Excel 2010 and Graph Pad Prism 7.0 software. Chi square test and student t-test were used to determine the presence or absence of statistically significant difference wherever necessary. Wherever computed, a P value of less than 0.05 was considered significant; since the confidence interval was maintained at 95%.

RESULTS

The Socio-demographic characteristics of 300 secondary school and 300 inter-college students are shown in Figure 1- 4. The students who are participated in this study have been segregated into four groups based on the class what they are studying which is shown in Figure 1.

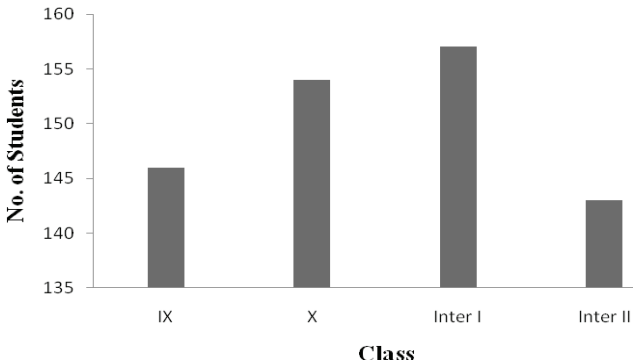

Figure 1: Class Wise Distribution

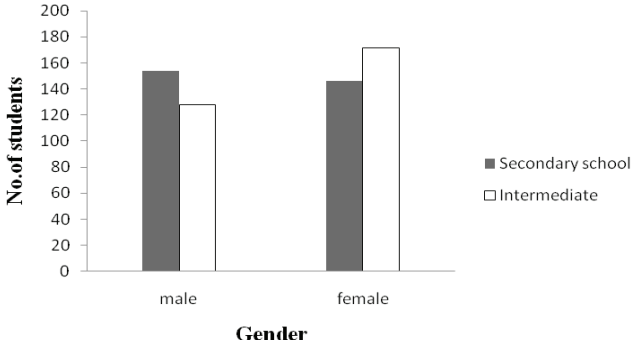

Figure 2: Gender Wise Distribution

Statistically significant difference in the gender was not found between the groups (P= 0.0744)

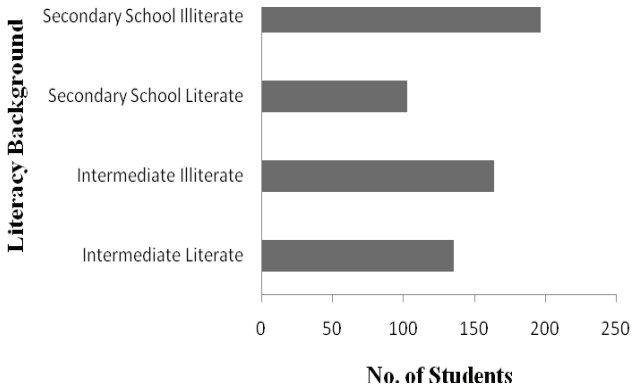

Figure 3: Parent's Literacy Distribution

Among parents of 600 students, 39.83 % (239) of parents were literate and 60.17 % (361) of parents were illiterate.

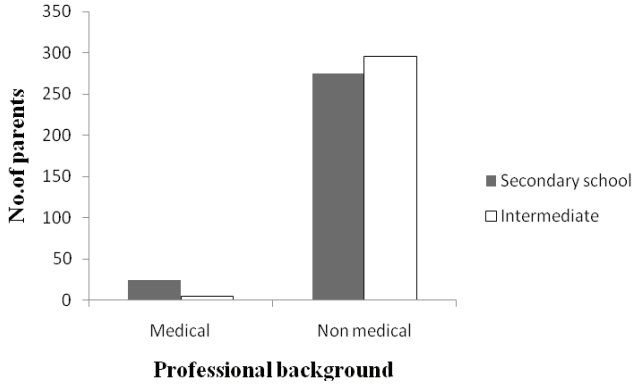

Figure 4: Parent's Professional Background- Medical / Non-medical

Knowledge, attitude and practice of the students about first aid measures were evaluated by using twenty eight questions. The results are shown in Table 1-3.

Table 1(a): Evaluation of students' knowledge about first aid

Questions	Yes N (%)		No N (%)	
	Secondary	Intermediate	Secondary	Intermediate
Q1	278 (92.6)	204 (68)	22 (7.3)	96(32)
Q2	300 (100)	300 (100)	0(0)	0 (0)
Q3	261 (87)	172 (57.3)	39 (13)	128 (42.6)
Q4	258 (86)	96 (32)	42 (14)	204 (68)
Q5	87 (29)	84(28)	213 (71)	216 (72)
Q6	0 (0)	113 (37.6)	300 (100)	187 (62.3)
Q7	133 (44.3)	111 (37)	167 (55.6)	189 (63)
Q8	102 (34)	108 (36)	198 (66)	192 (64)

Questions

Q1: Did you ever hear the word 'first aid'?

Q2: Where did you hear this term 'first aid'?

Q3: Do you aware of all the things that are present in the first aid box and what for they are used?

Q4: Do you know how to use the INHALER?

Q5: Do you know how to inject insulin to a diabetic

patient?

Q6: Do your school possess fire extinguisher?

Q7: Do you know how to use fire extinguisher in case of emergency?

Q8: Do you know about CPR (Cardio pulmonary resuscitation)?

Table 1(b): Evaluation of students' knowledge about first aid

Questions	Correct N (%)		Incorrect N (%)	
	Secondary	Intermediate	Secondary	Intermediate
Q9	78 (26)	172 (57.3)	222 (74)	128 (42.6)
Q10	21 (7)	12 (4)	279 (93)	288 (96)
Q11	19 (6.3)	7 (2.3)	281 (93.7)	293 (97.6)
Q12	175 (58.3)	124 (41.3)	125 (41.7)	176 (58.6)
Q13	90 (30)	78 (26)	210 (70)	212 (70.6)
Q14	187 (62.3)	148 (49.3)	113 (37.6)	152 (50.6)
Q15	67 (22.3)	119 (39.6)	233 (77.6)	181 (60.3)
Q16	213 (71)	274 (91.3)	87 (29)	26 (8.6)
Q17	300 (100)	300 (100)	0 (0)	0 (0)
Q18	152 (50.7)	160 (53.3)	148 (49.3)	140 (46.7)

***P value: 0.6204*

Questions

Q9: What measure will you take when it is continuously bleeding from an open wound injury?

Q10: How will you stop nose bleeding?

Q11: How will you save if you see any person affecting with fits around you?

Q12: During a snake bite injury, the stings over the injured area should not be removed through the mouth?

Q13: What is the first aid measure for a patient with burns?

Q14: What is the first aid measure for a person with breathing difficulty?

Q15: Which of the following action is called as self-CPR during any emergency conditions?

Q16: What are the first aid measures to be taken for a person with low BP?

Q17: Do you know the ambulance number to be dialed during emergency?

Q18: Do you know standing behind the child encircling the child's chest by hands and squeezing is the first aid measure for choking child?

Table 2: Evaluation of students' attitude on first aid

Questions	Positive N (%)		Negative N (%)	
	Secondary	Intermediate	Secondary	Intermediate
Q1	287 (95.7)	297 (99)	13 (4.3)	3 (1)
Q2	282 (94)	298 (99.3)	18 (6)	2 (0.7)
Q3	101 (33.7)	85 (28.3)	199 (66.3)	215 (71.7)
Q4	283 (94.3)	296 (98.7)	17 (5.7)	4 (1.3)
Q5	271 (90.3)	296 (98.7)	29 (9.7)	4 (1.3)

***P value: 0.2351*

Questions

Q1: Do you support that performing first aid is helpful in emergency condition?

Q2: Are you ready to perform first aid for a person during any emergency?

Q3: Don't you feel tense while performing first aid in any emergency condition?

Q4: Will you show interest in attaining the knowledge about first aid?

Q5: Do you think that it is necessary for everyone to know about the first aid?

Table 3: Evaluation of students' practice on first aid

Questions	Yes N (%)		No N (%)	
	Secondary	Intermediate	Secondary	Intermediate
Q1	242 (80.6)	116 (38.6)	58 (19.4)	184 (61.4)
Q2	138 (46)	125 (41.6)	162 (54)	175 (58.4)
Q3	224 (74.7)	247 (82.4)	76 (25.3)	53 (17.6)
Q4	124 (41.4)	225 (75)	176 (58.6)	75 (25)
Q5	185 (61.6)	188 (62.6)	115 (38.4)	112 (37.4)

***P value: 0.9508*

Questions

Q1: Have you ever used the first aid kit in your school?

Q2: Have you ever given first aid for burns?

Q3: Have you ever stopped bleeding by pressing over the open wound injury?

Q4: Have you ever performed first aid for fits?

Q5: Have you ever given first aid for nose bleeding?

Statistically significant difference was not found in the knowledge (P=0.6204), attitude (P=0.2351) and practice (P=0.9508) among secondary school and intermediate students about first aid measures.

DISCUSSION

The goal of first aid is to preserve life, prevent further injury and promote recovery. We can achieve this goal by obtaining training in three skills which safeguards breathing, bleeding and bones. The knowledge of students were assessed by using eighteen validated questions which mainly focuses on injuries and events that are common in school where emergency measures are considered essential. Among all knowledge questions, everyone has answered correctly to the seventeenth question implied that both the group of students was aware of ambulance number to be dialed in an emergency situation. Only 4.4 % of students have answered correctly (by making their airway clear and turning them side, with their mouth pointing to the ground) to the eleventh question and 95.6 % of students have given a wrong answer that they should hold a metal object. According to a study conducted by Jayanti S et al, only 15(3.3%) out of 441 students have complete knowledge of providing first aid for fits [17]. The students response rate to the remaining knowledge questions were shown in Table 1(a) & 1(b). This study has demonstrated that students have inadequate knowledge regarding the basic first aid measures to be provided for ordinary events. There is no significant difference in the knowledge of first aid measures among secondary school and intermediate students which was determined by the P value (0.6204). Therefore, the teachers and trainers should educate students in such a way they are knowledge enough regarding first aid measures.

Students' attitude towards first aid execution and learning were assessed by using five authenticated questions. Majority of the students (both secondary and intermediate) have showed positive attitude to the first, second, fourth and fifth question. The least positive response rate was obtained for the third question (i.e., don't you feel tense while performing first aid in any emergency condition?). Students should be adequately knowledge and trained to perform first aid, so that they will not feel tense while performing it. A study conducted by Al-khamees et al stated that a strong correlation was found between knowledge and attitude [18]. Significant difference was not found in the assessment of attitude about first aid measures among secondary school and intermediate students which was determined by the P value (0.2351).

In the present study, five questions were included to determine the student's level of practice regarding practice of first aid for burns, open wound injury, fits, nose bleeding and using first aid kit. Statistically significant difference was not found in the practice of first aid measures among secondary school and intermediate students which was determined by the P value (0.9508). The concept of practice is highly significant especially in the field of life supportive measures. Hence, it is mandatory for all the trainers to impart sufficient practice to the trainees on those supportive skills.

CONCLUSION

The knowledge, attitude and practice of secondary school and intermediate students on first aid was found to be adequate but still it is the responsibility of each and every school to provide training on first aid measures. In addition, every school and college must possess fire extinguisher and first aid kit in their school campus. The limitation is that this study was conducted among students of randomly selected schools and colleges. However, it is responsibility of the school management in educating students on how to identify risks and providing first aid training.

Conflict of Interest: The authors do not have any conflict of interest.

Source of Funding - Self

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DOI Numher: 10.5958/0976-5506.2018.01315.3

Subjective Assessment of Sleep Quality and its Associated Factors among Adult Population in Urban Puducherry

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ABSTRACT

Background: Sleep-related disorders considered are an unmet public health problem. Limited population based studies have been conducted in India. So, this study was undertaken to assess the quality of sleep and its associated factors among adults in an urban area of Puducherry.

Materials and Method: A community based cross- sectional study was conducted among 409 individuals aged 20-60 years from Jan 2014 to April 2015 in urban field practice area of Mahatma Gandhi Medical College and Research Institute, Pondicherry. Multistage sampling was used to select the subjects. A Pretested, Semi-structured questionnaire in local language (Tamil) was administered. Pittsburgh Sleep Quality Index (PSQI) was used to assess the sleep quality. Socio-demographic and other information related to smoking, alcohol, tea consumption, milk consumption before sleeping, physical exercise, any chronic illness was collected from the participants. Percentages, mean and odds ratio were used in analysis.

Results: Majority of study subjects were females (70.2%), The mean age of the participants was 40.8 ± 11.3 years. Prevalence of bad sleep quality (PSQI ≥5) was 47.6%. Widowed, divorced and separated individuals had 3.3 times of getting bad sleep compared to unmarried individuals. Sleep quality was significantly associated with age, hypertension and diabetes.

Conclusion: In this study, the prevalence of bad sleep quality was high. Widows, divorced and separated individuals were at higher risk for sleep disturbances. The hypertensive & diabetic individual had more sleep related problems than normal individual.

Keywords: *Sleep quality, Pittsburgh Sleep Quality Index, Public health Problem.*

INTRODUCTION

Sleep is a physiological process and its quality is strongly related to individual's health[1]. It is a changeable state of reduced consciousness, characterized by altered muscle tone, slowing of brain electrical activity and autonomic changes[2]. Disturbed quality or quantity of sleep limits the normal mental and bodily functioning[2]. Lack of sleep has linked with an increased risk of factors like hypertension, diabetes, impaired glucose tolerance and obesity[3,4].

Lifestyle, type of work, dietary pattern and stress affects the sleep pattern and results in sleep related disorder (SRD). A sleep related disorder is an alteration in the sleep pattern, which interferes with mental, physical and emotional functioning of a person[5]. Diagnosis and treatment of SRDs helps in improving the capability of the individuals while preventing hypertension, accidents and psychological disturbances. SRD also impairs quality of life and have been considered "an unmet public health problem" [6].

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Globally there is a variation of prevalence of sleep problems ranging from 3.9% to 40%, in different African and Asian countries[7]. The incidence of sleep disturbances among general Asian population ranges from 26.4% to 39.4% [8]. In a study in Karnataka, India, reported rates of sleep related disorders ranged from 20% to 34.2% [9]. Another study in North India in urban area, reported a prevalence of 28% for sleep disorders related to initiation and maintenance of sleep[10].

Sleep problems can be identified by objective and subjective methods. Subjective quality of sleep can be assessed by administration of questionnaire, clinical interviews and sleep diaries. One of the widely used methods for subjective assessment of sleep is Pittsburgh Sleep Quality Index (PSQI) questionnaire[11].

Even though the problem is immense, there is paucity of studies related to sleep in the India. Therefore, we undertook the study to assess the quality of sleep and its associated factors among adults in urban Pondicherry.

MATERIALS AND METHOD

A Community based cross- sectional study was conducted at Urban Field Practice Area of Department of Community Medicine of MGMCRI, Pondicherry from Jan 2014 to April 2015. A sample size of 409 was calculated based on: 20% prevalence of sleep disorders[9] 95% confidence interval, 10% non-response rate, 5% absolute error and design effect of 1.5.

The list of houses was obtained from the urban health centre. Of the total 5147 population, 3245 were adults in the age group of 20-60 years .Using probability proportional to size, individual sample size for each of the four urban areas was calculated. Systematic random sampling method was used to select the houses in the respective areas. One adult from each house was selected by simple random sampling.The inclusion criteria were adults of 20-60 years age group residing in selected study area. Individuals who gave written informed consent were included in the study. Houses in which door was locked during three consecutive visits were excluded from the study.

There were four parts of the proforma: **Socio-demographic profile, Sleep-related information (PSQI)[11]** (A PSQI score of less than five is indicative of good sleep quality and score of five or more indicates bad sleep quality)**, Measurements (**weight, waist circumference, blood pressure) [12-14], **Other information** (smoking, alcohol, tea/coffee consumption, milk consumption before sleeping, physical exercise, any chronic illness etc.)

Data collection was done by using semi-structured questionnaire in local language (Tamil). Study was conducted after getting ethical clearance from Institutional Human Ethics Committee (IHEC). Data entry and analysis were done using Microsoft Excel and Epi info 7. Data were presented as mean and, percentages and appropriate statistical test (odds ratio) was applied. P value less than 0.05 was considered statistically significant.

RESULTS

Total 409 adults between 20 to 60 years participated in the study, mean age of the participants was 40.8 ± 11.3 years. Most of the participants were Hindu (77.3%) followed by Muslims (9.5%) and Christians (12.7%). Based on the PSQI score, prevalence of bad sleep quality (PSQI score ≥ 5) was 47.7%) Good sleep quality was found in 214 (52.3 %) subjects. Mean PSQI score was 1.47±0.50.

It was found that there was increasing odds of getting poor sleep quality as the age increases with significant p-value (<0.001). Widowed, divorced and separated subjects had 3.3 times of getting bad sleep compared to unmarried subjects with significant difference [Table 1].

Table 1 : Association of sleep quality with socio-demographic factors

Characteristic <5 (n=214) n(%)		PSQI Score		Total (n-409) n(%)	Odds ratio	p-value
		<5 (n-214) n(%)	≥5 (n-195) n(%)			
Age (years)	20-30	66(71.7)	26(28.3)	92(22.5)	1	<0.001
	31-40	69(56.6)	53(55.4)	122(29.8)	1.95	
	41-50	45(44.6)	56(55.4)	101(24.7)	3.15	
	51-60	34(36.2)	60(63.8)	94(23.0)	4.48	
Gender	Male	70(57.4)	52(42.6)	122(29.8)	1	0.18
	Female	144(50.2)	143(49.8)	287(70.2)	1.33	
Occupation	Employed	100(55.2)	81(44.8)	181(44.2)	1	0.21
	Unemployed	17(54.8)	14(45.2)	31(7.6%)	1.01	
	Housewife	97(49.2)	100(50.8)	197(48.2)	1.2	

There is no significant difference of Sleep quality with milk/tea consumption, smoking or alcohol consumption [Table 2].

Table 2: Association of sleep quality with smoking, alcohol and tea/milk consumption

Characteristic		PSQI Score		Total (n=409) n(%)	Odds ratio	p-value
		<5(n-214 n(%)	≥5 (n-195) n(%)			
Tea consumption	No	20(52.6)	18(47.4)	38(9.3)	1	0.96
	Yes	194(52.3)	177(47.7)	371(90.7)	1.01	
Milk consumption before sleep	No	147(53.6)	127(46.4)	274(67.0)	1.17	0.44
	Yes	67(49.6)	68(50.4)	135(33.0)	1	
Smoking	No	196(52.8)	175(47.2)	371(90.8)	1	0.52
	Yes	18 (47.4)	20 (52.6)	38 (9.2)	1.24	
Alcohol	No	206(53.0)	183(47.0)	389(95.1)	1	0.25
	Yes	8(40.0)	12(60.0)	20(4.9)	1.68	

There was no significant association of exercise, central obesity and BMI with sleep quality. Total 55% individuals had bad sleep quality in normal weight category compared to 45% in overweight category.[Table 3].

Table 3: Association of sleep quality with exercise, central obesity and BMI

Characteristic		PSQI Score		Total (n-409) n(%)	Odds ratio	p-value
		<5 (n-214)	≥5(n-195) n(%)			
Exercise	Yes	114(52.8%)	102(47.2%)	216(52.8%)	0.96	0.96
	No	100(51.8%)	93(48.2%)	193(47.2%)	1	

Cont... **Table 3: Association of sleep quality with exercise, central obesity and BMI**

Central obesity (WC-male: >90 cm, female: >80 cm)	Yes	87(49.4%)	89(50.6%)	176(43.0%)	1.22	0.31
	No	127(54.5%)	106(45.5%)	233(57.0%)	1	
BMI classification	Normal/underweight(<23kg/m^2)	45(45%)	55(55%)	100(24.4%)	0.7	0.09
	Pre-obese /obese (≥23kg/m^2)	169(54.7%)	140(45.3%)	309(75.6%)		

The odds of having bad sleep quality were two times among the hypertensive individuals than those who were not hypertensive. The risk of having bad sleep quality was four times higher among the diabetics compared to non-diabetics and eight times higher among those who had heart disease compared to those who were not having heart disease [Table 4].

Table 4 : Association of sleep quality with chronic illness

Chronic disease <5 (n=214) n (%)		**PSQI score**		**Total (n-409) n (%)**	**Odds ratio**	**p-value**
		<5(n-214) n (%)	**≥5 (n-195) n(%)**			
Hypertension	Yes	15(30.0%)	35(70.0%)	50(12.2%)	2.9	<0.001
	No	199(55.4%)	160(44.6%)	359(87.8%)		
Diabetes Mellitus	Yes	13(24.1%)	41(75.9%)	54(13.2%)	4.1	<0.001
	No	201(56.6%)	154(43.4%)	355(86.8%)		
Heart diseases	Yes	1(12.5%)	7(87.5%)	8(2.0%)	7.9	0.02
	No	213(53.1%)	188(46.9%)	401(98.0%)		

DISCUSSION

Most of the participants were Hindus (77.3 %), followed by Christians (12.7 %) and Muslims (9.5 %). These figures were comparable to the national data in census 2011[15].The prevalence of poor sleep quality in this study was 47.7% in 20-60 years age group. Similar results were obtained by Tirgari B *et al* (57.5%) and Asghari AM *et al*(37%)[16,17]. Advanced age is associated with changes in sleep characteristics and structure, with increased difficulties in sleep initiation and maintenance[18]. In the present study, sleep quality was significantly associated with age, with increase in age, the risk of getting poor sleep quality increased. In a study done by Doi Y *et al*. among Japanese adults, poor sleep was seen with increase in age among females[19].

In present study, poor sleep quality was higher among females (49.8%) compared to males (42.6%) but the difference was not significant. Study done by Asghari A *et al* and Bidulescu A *et al* also reported similar results[17,20]. Another study done by Assaad S *et al.*, among 735 participants of aged 18-25 years in Lebanon, found that males had poor sleep quality compared to females (57.8% Vs. 42.8%) [21].

In present study, subjects who were widowed, divorced and separated had three times higher risk of getting bad sleep compared to unmarried individuals with significant difference. In a study, done by Asghari A *et al.,* mean global PSQI was lower among the unmarried individuals while married, separated and widowed individuals had significantly higher score [17].

No association was observed between sleep quality and tea or coffee consumption. Similar finding was observed in a study done by Velez JC *et al.*,[22]. In the present study, sleep quality was not associated with exercise. A study by Chien PL *et al.,* found similar result [8]. Another study done by Velez JC *et al.,* showed no significant difference in sleep quality between those who had physical activity and no physical actvity was not significant[22]. Contrary to our finding, in a study by Sherrill DL *et al.,* it was found that the individuals who were physically active had lower incidences of self-reported sleep problems[23]. Another study done by Bidulescu A *et al.*, showed that the sleep quality was associated with the physical activity [20].

In obese people, the compression of the pharynx by the cervical superficial fat mass cause air duct stricture and fat deposition in the tissues of the pharynx which leads to sleep disorders[24]. Obese subjects have difficulty falling asleep and maintaining sleep at night and shorter sleep latencies. Metabolic abnormality leads to hyper arousal at night and hypo arousal during the day[25]. However, contrary to this, in present study, obesity has no association with sleep quality.[22] Contrary to the present study, in a study by Myllymaki T *et al.,* inverse relationship was seen between BMI and sleep duration[26]. A study done by Bidulescu A *et al.,* in Atlanta showed that poor sleep quality was associated with BMI[20].

The present study showed that the risk of having bad sleep quality was four times higher among the diabetics compared to non-diabetics individuals. In a study done by Rajendran A *et al*. and Bidulescu A *et al* found similar result[27,20].

The present study showed that hypertensive individuals have two times risk of having bad sleep quality compared to non-hypertensive individuals. A study done by Bidulescu A *et al.*, showed that the sleep quality was not associated with the hypertension[20]. In present study heart disease was also found to be an important factor for bad sleep quality.

Alcohol intake in early stage induces sleep through depressing brain activities, then later its stimulating effects disturbs normal sleep stages[28]. The present study showed that among the individuals who consume alcohol, 60.0 % had bad sleep quality, although there was no association between the sleep quality and alcohol.

CONCLUSION

In this study, the prevalence of bad sleep quality was high (47.7 %.). It was found that as the age increases, the sleep related problem increases. Widowed, divorced and separated subjects had higher risk. Therefore, the priorities should be the early identification of sleep disorders and strengthening of intervention that address the various determinants of the sleep disorders. Sleep education program is needed to create awareness among the general population.

Conflict of Interest: Nil

Source of Funding : Nil

Ethical Clearance: Study was conducted after getting ethical clearance from Institutional Human Ethics Committee (IHEC).

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DOI Numher:10.5958/0976-5506.2018.01316.5

Healthcare Providers Views on Husband-Participation in Maternal Healthcare

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ABSTRACT

This research paper analyzes the healthcare providers' views on husband-participation in maternal healthcare services. This paper divided into three sections. Firstly, the paper looks into roles and responsibilities of health care providers (doctors, ANMs and ASHA workers) in maternal healthcare services. Secondly, the health providers' views on husband-participation in maternal healthcare. Lastly, the paper concludes and suggests by emphasizing the significance of improving the husband-participation in maternal healthcare of their wives and newborn child.

Keywords: - *Maternal health, Healthcare providers, Ante Natal Care, Natal care and Post- Natal Care.*

INTRODUCTION

Maternal health is a crucial concept in women's health; it is related to pregnancy and child birth. Quality health care in these stages is the right of both the woman and the unborn child. Maternal healthcare is one of the components of reproductive health programme in India. Maternal Health was among one of the Millennium Development Goals (MDG-5); to improve health of mothers and reduce the maternal mortality to 109 death/ per one lakh live births by 2015 was being targeted. 'Ensure healthy lives and promote well-being for all ages is one of the Sustainable Development Goals (SDG-3); to reduce the global maternal mortality ratio to less than 70 death/per one lakh live births by 2030 is being targeted[7]. The Maternal Mortality Rate (MMR) is 167 deaths per one lakh live births in India[3]. According to World Health Organization every year, 45,000 women in the country die from pregnancy related complications, which is more than in any other country[6].

Women, in patriarchal social structure like India, are often considered vulnerable. There are multifarious dimensions of this gender based vulnerability – since ancient and medieval times, women have been discouraged to acquire education and access other developmental avenues.

In patriarchal structures of Indian society, women often have been found caught up in multiple and repeated pregnancies that take heavy toll of their health and life[1].

Attention to men's involvement in reproductive health received a force following the Programme of Action forged at the 1994 International Conference on Population and Development (ICPD) (Cairo Programme of Action, September 1994). Under the programme, focus was on men play a key role to promote gender equality and to encourage and enable men to take responsibility for their sexual and reproductive behaviour and their social and family roles. The programme also highlights the women's health and safe motherhood emphasizing on education to engage men's support for maternal-health and safe motherhood; all countries are urged to seek changes in high-risk sexual behaviour and to devise strategies to ensure that men share responsibility for sexual and reproductive health[4].

Husband's participation in the maternal health care of women is very essential for healthy mother and healthy child. It may be preventable strategies for maternal death in India. In traditional societies, generally, men or husbands have been uninformed about the pregnancy concerns of the wife and as well as maternal health is always considered the women's domain in Indian society.

There is need to develop ways and means to implement the ICPD+5 recommendation which urges Governments and their partners to "support public health education to create awareness of the risks of pregnancy, labour and delivery and to increase the understanding of the respective roles and responsibilities of family members, including men, as well as of civil society and Governments, in

promoting and protecting maternal health"[5].

Husband-participation in maternal health care of women is helpful in terms of providing better health care and to ensure the institutional delivery of pregnant women. The health system and health professionals are showing the need to increase the couple counseling about the maternal health care and educate the husband about each and every aspect of care of maternal health. It may be helpful to realize that husband participation ensure the better health of mother and new born child care. Now we need to realize that maternal health care is not the domain of women only but it is a joint effort of both husband and wife.

RATIONAL OF THE STUDY

Most of the studies did not reflect the healthcare providers' views on husband-participation in maternal healthcare. Whereas various studies revealed that behaviour of health care staff members become one of the barrier for not promoting husband-participation in maternal healthcare due to unwelcome behaviour toward them. There is need to understand healthcare providers needs and challenges face in the healthcare system especially related to maternal healthcare services. This study just gives idea about the healthcare providers' viewpoint on husband-participation in maternal healthcare. But due to small sample size the study cannot be generalized. For this reason there is need to conduct more research studies which reflect the healthcare providers' views and how health care system positively can incorporate husband-participation in maternal healthcare services. This is automatically increase health status of pregnant mothers and their children in the society.

OBJECTIVES

The objectives of the study were

To understand roles and responsibilities of healthcare providers (ASHA Workers, ANMs, Nurses and Doctors) in maternal healthcare services.

To study the healthcare providers' views on husband-participation in maternal health care services.

MATERIAL AND METHOD

To achieve the above objectives, the present study adheres to qualitative research. The study was descriptive research design. Sample size consisted of 8 healthcare providers (2 ASHA Workers; 2 ANMs; 2 Doctors and 2 Nurses) from dispensary and hospital of Delhi were selected by using non-probability method of purposive sampling technique for the purpose of interview. Data were collected through in depth interview schedule.

FINDINGS

Role and Responsibilities of Healthcare Professionals:-

ASHA workers revealed that the role and responsibilities is of providing the maternal health care services to community women. They shared that the roles and responsibilities are- registration of pregnant women in dispensary, some time pregnant women themselves report or contact the ASHA workers, issuing the antenatal check-up card, facilitate the antennal check-ups visits, accompany the women for hospital delivery or motivate for birth of new born child in hospital, ensure immunization of mother and their child, after the delivery they conduct home visits, discuss about various methods of family planning and follow-up the cases if birth took place at home.

ANMs (health providers) revealed that the role and responsibilities is to provide maternal health care services to women which includes- antennal check-ups facilities, child immunization, aware about various methods of family planning and their importance and make the referral service (depend upon choice of women in which she want to birth their child) for institutional delivery. They also conducted three home visits if the delivery took at home and ANMs suppose to conduct home visits within two days of delivery. Incase delivery took place in hospital than ANMs suppose to conduct home visits within one week of delivery. During the home visits they discuss about care of mother and child and importance of breast feeding for new born. Second home visits conduct within fourteen day which focuses on family planning and child immunization. Last home visits conduct within one month of child birth by ANMs.

Further, doctors mentioned that during the natal (delivery) stage works include- registration of pregnant women, all medical treatment and check-ups which is required, time to time check the women health condition after delivery, counseling on family planning and identification of medical problems.

Further, the nurses discussed that the role and

responsibilities in terms of providing the antenatal check-ups services for pregnant women. For this registration of pregnant women, distribution of medicine, medical check-ups such as injection and counseling about pregnancy care, breast feeding and family planning.

Husband-Participation in Maternal Health Care: Observation and Experiences of healthcare providers

Antenatal Care Services

Both the ASHA workers and Auxiliary Nurse Midwives were told that in earlier times, husbands hardly participated in maternal health care of their wives. ASHA workers expressed that now a days more and more men are actively participating in the same. They also informed that in joint families, husband-participation is still less as compared to nuclear families, where they play crucial role in caring for their pregnant and lactating wife. In joint families mother-in-laws and other relatives take up major responsibilities of caring for pregnant women.

Further, doctors and nurses from the government hospital cited that fewer men accompany their wife during the antenatal check-ups. Men are not allowed to come with their wife during the antenatal check-ups. Nurses also do not interact with the husband because as they are not allowed entering the antenatal check-ups services premises.

Natal Care Services (Delivery Time)

Both ASHA workers and ANMs stated that most of the husbands accompanied their wives during the delivery. The possible reason for husbands is to ensure the economic support and other requirement which is needed during delivery of wife in hospital.

Whereas both the doctors revealed that fewer husband and more family members accompanied the pregnant women. They did not had much interaction with husbands of pregnant wives because they were busy in arranging medicines, blood, report, etc., required at that time. One of doctor said, "In most of the cases pregnant wives had very low anaemia problem which make her delivery very risky for her life. Husband did not care about life of their wife. Some of husband did not willing or prepare to donate own blood for their wife".

Another case shared by doctor, "*one of case in which no family member accompanied the pregnant woman during the delivery. It was second pregnancy of the woman and only her five year old child is with him. All the arrangement did by doctors' team*". Above discussed cases by doctors revealed that lack of family members and husband support during the delivery time of women in hospital.

Postnatal Check-Up (After Child Birth)

Immunization of Child

ASHA workers mentioned that the fewer men accompanied their wife during the child immunization. Because they think it is responsibility of mother to provide child immunization. Now day's improvement in child immunization women were more concerned for child immunization.

According to ANMs mothers' motivation was necessary for proper utilization of child immunization services (thereby minimizing role of father). Fewer of husbands accompanied their wife during the child immunization. They also stated that the reasons include, it is difficult to those husbands who are engaged in private sectors and daily wagers. They emphasized on significant role of mothers in availing child immunization services. On the other hand, ANMs emphasized that there is no role of fathers in child immunization. But there is need to educate the father about importance of child immunization for his child health. If father do not able to accompany their wife for child immunization but they can ask and remind their wife on the same. Healthcare professional do not realize the importance of husband-participation in child immunization.

Family Planning

ASHA workers expressed that condoms as a method of family planning are quite popular among the community people. Its high usage is also due to free of cost availability in the dispensary. ASHA workers need to provide the condom for women during each home visits. Second most popular method of family planning is copper-T. Its high practice is also due to awareness created by ASHA workers among women for usage of copper-T method. For these work ASHA workers gets some money based-incentive to ensure use of copper-T by community women. As health worker ASHA have less chance to talk to husbands of pregnant women on family planning issues and it is therefore easier from them to convince or motivate women for using family planning methods. They further told that in case, women

decide to undergo tubectomy, their husband accompany them. During the data collection the researcher observed that one of woman wants ASHA worker should talk to her husband on family planning because her husband is not in favour of usage of copper-T. It reflects that ASHA worker themselves do not want to interact with men on such issue. It may be they felt some kind of shyness and hesitance toward talking to husband on family planning issues.

Further, ANMs also expressed that husband role in family planning is very essential for their wife. They also shared that without husband's consent, no woman ever takes step for family planning. A study by Ravichandran find that wife's perception of her spouse's attitude is important as it may help her in her own decision-making. During the data collection, it reflects that most women respondents have take consent of her husband's for practicing methods of family planning. Husbands' decision-making plays significant role in usage of family planning by his wives[2].

ANMs only deal with women for motivating the use of family planning methods. If the husband is not willing to methods of family planning than ANMs conduct the home visits for motivating about use of family planning methods.

Next, doctors mentioned that husbands do not accompany their wife during the postnatal care services. One of doctor said that "if husband engaged in private job and he take one day off from their work then he lose one day money from their salary". After the six weeks of child birth couple supposes to come in hospital for attending the family planning counseling session. For this most of women did not come to hospital and during that time period women may conceive another child. It can be unfriendly behavior of hospital staff members that a whole day spends on family counseling. Doctor told after child birth they motivate women to use copper-T and they follow. Discussion on options of family planning methods does not take place.

Significance of Husband-Participation in Maternal Health Care

All the ASHA workers, doctors and nurses agreed that husbands should participate in maternal health care of their wives as they are main decision maker related to wives' health and do have say in the family matters. Husbands' support is essential at all levels for improvement in health condition of their wives.

One of the ANM even told that if family support is not there with women then the husband's participation is required while another ANM does not feel the relevance of husband-participation in maternal health care services of their wife.

The analysis reveals that almost of all the health care professionals want husband should participate in maternal health care of their wife. If husband accompany their wife for ANC visits but doctor not allow them to enter in doctors' room with their wife. It may be they make their husband (male) less motivated to accompany their next visit or less participation in maternal health care of their wife. How much health setups are open to allow both husband-wife in maternal health care in Indian society?

CONCLUSION

Maternal health care is one of the sustainable development goals of the country. The present study revealed that health providers (Doctors and ANMs) and ASHA workers recognized husband-participation in maternal healthcare of their wives. Somehow lack of health set-ups or health institutions did not promote the couple friendly approach during the maternal healthcare services. In India, child bearing and rearing practice always consider the women domain. The present study comes up with various suggestions for improving husband-participation in maternal healthcare. Firstly, government need to develop infrastructure of the health system where they can promote husband-participation in maternal healthcare. Health care providers' views on husband-participation in maternal healthcare need to be highlighted. Government should work at three level of health system such as primary, secondary and tertiary level. Healthcare providers need to promote the child bearing is not mother responsibility but it is both or joint husband and wife responsibility for ensure healthy mother, children, family and society.

Ethical Clearance- Not applicable

Source of Funding- Not applicable

Conflict of Interest - Nil

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DOI Numher: 10.5958/0976-5506.2018.01410.9

The Role of Alcohol in the Aetiology of Oral Cancer: A Study Done in Southern India

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ABSTRACT

Background: Oral cancer is one of the ten common cancers in the world. Its high frequency in Central and South East Asian countries has been well documented. It is estimated that about 1.98 lac new cases and 98000 deaths occurs worldwide with a mortality rate of 2.1 per lac population. The risk factors for the development of Oral cancers includes alcohol consumption.

Objective : To find the association between Alcohol consumption and oral cancer.

Method: A Case control study done at Kidwai Memorial Institute of Oncology, Bangalore, India. Study subjects included new cases of oral cancer attending the hospital during the study period and equal number controls. Data collection was done by interview method.

Results: Alcohol drinking with an Odds ratio (OR) of 2 was significantly associated with the risk of oral cancer. The OR was 2.4 for arrack drinkers compared to non alcohol consumers. The OR was 3.1 for those who consumed daily and 2.9 for those who consumed thrice weekly. Those consuming more than 120 ml showed an OR 3.84 compared to non drinkers. Those who consumed alcohol for 21- 30 years showed an OR of 2.0 and those who consumed for more than 30 years showed an OR of 2.7 compared to non alcoholics.

***Key-words**: Alcohol consumption, case control study, Oral cancer*

INTRODUCTION

In the developing countries, cancer is one among the ten commonest causes of mortality. Oral cancer is a major problem in India. The estimated incidence is 10.1 cases per lac population for males and 4.3 per lac population in females. [1] This cancer epidemic is due to the combined effect of increased life expectancy and the high or increasing levels of prevalence of cancer risk factors. India has one of the highest incidences of oral cancer in the world. [3] The risk factors for the development of Oral cancers include tobacco smoking, tobacco chewing, oral snuff, chewing betel quid, consumption of alcohol, the presence of potentially malignant oral lesions and poor oral hygiene. [4] There is need for more in-depth studies of various modifiable risk factors in India. This would enable us to evolve appropriate interventions and effective preventive measures to reduce the burden .Thus, the present study would attempt to find the association between alcohol consumption and oral cancer.

METHOD

The Case Control study was conducted at Kidwai Memorial Institute of Oncology (KMIO), located in Bangalore for one year . The study was conducted after obtaining Institutional ethical committee clearance. In this study, the proportion of smokers among controls (0.4) and cases (0.73) was considered to calculate the sample size. The considered level of probability was 5% (a error) and with the β error of 20 % and a permissible error of 0.15. So number of cases were 200 and number of controls were 200. Total sample size was 400.

Definition of a case: Newly diagnosed case of oral cancer of all age groups and all stages of the disease confirmed by biopsy and histopathological report at KMIO. Sources of case

include the hospital, KMIO, Bangalore. For each case, one control was selected. Five year age group matched and sex matched controls were selected. Sources of controls include hospital controls and Patient attendees. Hospital controls included patients with other cancers, other than tobacco related cancers. Patient attendees included healthy attendants of cases either their relatives or friends . Among Cases Terminally ill patients and cases with oral cancer as secondary carcinoma were excluded. Among hospital controls, patients with Tobacco related cancers such as Cancer of Esophagus, Larynx, Lung and Urinary bladder were excluded. Consent was obtained from all the study subjects. Information regarding the socio demographic details, the exposure to risk factors such as alcohol in terms of age at start of habit, type used, dose and duration of exposure were obtained with the help of pretested semi structured questionnaire by interviewing the study subjects.

The following statistical methods were employed to analyze the data. Descriptive statistics, Inferential statistics ie, to evaluate the association between risk factors with the development of oral cancer, Chi square test of significance was employed. To find the strength of association, odds ratio (OR) along with 95% CI (confidence interval) were estimated. A significance level of *P </= 0.05* was considered for statistical significance.

RESULTS

Majority of the study population, belonged to the age group of 50-59 years followed by in the age group of 60-69 years. The average age of oral cancer was 54.8 years with a standard deviation of 10.70 years. The study population consisted of 74.0% males and 26.0% females. Hindus constituted the maximum number followed by Muslims and Christians . A higher proportion of Illiterates and unskilled workers were found among cases compared to controls.

A higher proportion of alcohol consumers 86 (43.0%) was observed among cases as compared to the controls, 54 (27.0%). The difference of exposure to alcohol consumption between cases and controls was found to be statistically significant ($p < 0.001$). A statistically significant association was found between alcohol consumption and oral cancer. Alcohol consumers showed a 2 fold increased risk for oral cancer (OR= 2.0) compared to non alcoholics. (Table 1)

Table 1. Odds ratios for Oral cancer according to habit of Alcohol consumption.

Alcohol consumption	Cases No. (%)	Controls No. (%)	OR (95% CI)
Yes	86 (43.0)	54 (27.0)	2.0 (1.3 - 3.10)
No	114 (57.0)	146 (73.0)	1.0
Total	**200 (100)**	**200 (100)**	

(Chi square value =11.32, df =1, p< 0.001)

(OR = Odds Ratio, 95% CI = 95% confidence interval, df = degrees of freedom)

Among various types of alcohol beverages analyzed, arrack drinkers showed highest risk for oral cancer with an OR of 2.4 compared to non alcoholics. This could be due to highest ethanol content in arrack compared to other types. However other types of alcoholic beverages did not show significantly increased risk for oral cancer. (Table 2)

Table 2. Odds ratios for Oral cancer according to Type of alcohol beverage.

Type of alcohol beverage	Cases No. (%)	Controls No. (%)	OR (95% CI)
Arrack	61(30.5)	32 (16.0)	2.4 (1.49 - 4.0)
Beer	11 (5.5)	10 (5.0)	1.4 (0.57 - 3.43)

Cont... **Table 2. Odds ratios for Oral cancer according to Type of alcohol beverage.**

Whisky	7 (3.5)	8 (4.0)	1.1 (0.39 - 3.18)
Others	7 (3.5)	4 (2.0)	2.2 (0.64 - 7.84)
Non alcoholics	114 (57.0)	146 (73.0)	1.0
Total	**200 (100)**	**200 (100)**	

(Chi square value =14.08, df =4, p< 0.01)

Others included rum, brandy and toddy.

It was evident that, those who consumed alcohol daily had higher risk of developing oral cancer with an OR of 3.1 and those who consumed three times weekly showed an OR of 2.9 compared to never drinkers. However those consuming alcohol weekly, monthly and occasionally did not show significant risk of developing oral cancer. (Table 3)

Table 3. Odds ratios for Oral cancer according to Frequency of drinking.

Frequency of alcohol drinking	Cases No. (%)	Controls No. (%)	OR (95% CI)
Daily	27(13.5)	11(5.5)	3.1 (1.49 - 6.62)
Three times weekly	16(8.0)	7(3.5)	2.9 (1.16 - 7.35)
Weekly	17(8.5)	12(6.0)	1.8 (0.83 - 3.95)
Monthly	11(5.5)	8(4.0)	1.7 (0.68 - 4.52)
Occasionally	15(7.5)	16(8.0)	1.2 (0.56 - 2.53)
Non alcoholics	114 (57.0)	146 (73.0)	1.0
Total	**200 (100)**	**200 (100)**	

(Chi square value =15.89, df =5, p< 0.01)

An increasing trend for oral cancer with increase in the quantity of alcohol consumption was observed. Those who consumed more than 60 ml upto120 ml per drink showed an OR 3.49 and those consuming more than 120 ml showed an OR 3.84 compared to non drinkers. However those who consumed ≤ 60 ml did not show increased risk. (Table 4)

Table 4. Odds ratios for Oral cancer according to Quantity of alcohol consumed.

Quantity of alcohol consumption (ml)	Cases No. (%)	Controls No. (%)	OR (95% CI)
< = 60	6 (3.0)	25 (12.5)	0.3 (0.12 - 0.77)
61-120	71 (35.5)	26 (13.0)	3.49 (2.09 - 5.84)
> 120	9 (4.5)	3 (1.5)	3.84 (1.01 - 14.49)
Non alcoholics	114 (57.0)	146 (73.0)	1.0
Total	**200 (100)**	**200 (100)**	

(Chi square value =41.29, df =3, p< 0.001)

Alcohol consumers who started the habit before the age of 25 years showed an OR 3.2 and those started after 25 years showed an OR 1.2 compared to non drinkers. Earlier the age at start of drinking greater was the risk of developing oral cancer. (Table 5)

Table 5. Odds ratios for Oral cancer according to Age at start of the alcohol drinking habit.

Age at start of the drinking habit (years)	Cases No. (%)	Controls No. (%)	OR (95% CI)
<=25	53 (26.5)	21 (10.5)	3.2 (1.84 - 5.68)
> 25	33 (16.5)	33 (16.5)	1.2 (0.74 - 2.19)
Non alcoholics	114 (57.0)	146 (73.0)	1.0
Total	200 (100)	200 (100)	

(Chi square value =18.25, df =2, p< 0.001)

A significant dose response relationship was observed for duration of drinking alcohol with oral cancer. The risk of developing oral cancer increased after the duration of 20 years i.e. those who consumed alcohol for 21- 30 years showed an OR of 2.0 and those who consumed for more than 30 years showed an OR of 2.7 compared to non alcoholics. It was inferred that cancer risks increased as the duration of habit increased after duration of 20 years. (Table 6)

Table 6. Distribution of cases and controls with regards to Total duration of habit of alcohol consumption.

Total duration of habit of alcohol consumption (years)	Cases No. (%)	Controls No. (%)	OR (95% CI)
<=20	22 (11.0)	18 (9.0)	1.5 (0.80 - 3.05)
21-30	36 (18.0)	23 (11.5)	2.0 (1.12 - 3.57)
>30	28 (14.0)	13 (6.5)	2.7 (1.36 - 5.55)
Non alcoholics	114 (57.0)	146 (73.0)	1.0
Total	**200 (100)**	**200 (100)**	

(Chi square value =12.85, df =3, p< 0.005)

DISCUSSION

Oral cancer is any cancerous tissue growth located in the mouth. It may arise as a primary lesion originating in any of the oral tissues, by metastasis from a distant site of origin, or by extension from a neighboring anatomic structure, such as the nasal cavity or the maxillary sinus. The most common oral cancer is squamous cell carcinoma, originating in the tissues that line the mouth and lips. Oral cancer most commonly involves the tissue of the lips or the tongue. It may also occur on the floor of the mouth, cheek lining, gingival or palate . These are malignant and tend to spread rapidly. [5]

ORAL CANCER AND ALCOHOL CONSUMPTION

Alcohol is an independent risk factor for oral cancer. The risk in consumers of alcohol depends on the type and the amount consumed. Alcohol may promote carcinogenesis by various mechanisms which

may include dehydrating effects of alcohol on the mucosa increasing mucosal permeability and effects of carcinogen in tobacco, nutritional deficiency and solubilising tobacco. Also liver damage may weaken the immunological status. The alcoholic beverage used commonly in South India are arrack which is locally brewed liquor with 40-50% ethanol. Another locally fermented and distilled sap from palm trees is called toddy with 4% ethanol. [4]

In a study conducted in Brazil, excess risks were observed with increased consumption of wine and cachaca, a distilled sugar cane spirit. The excess risk due to alcohol seemed to reach a plateau at a cumulative level of 1000 kg.[6]

A study done in Spain concluded that all measures of alcohol drinking status, amount, duration, and cessation were strongly associated with cancer risk. A statistically significant increased risk of oral cancer was detected among subjects drinking as little as one drink per day. Cancer risks increased steadily and markedly with longer duration of the habit and were statistically significant after 20 years of alcohol consumption. The association with cancer risk was much stronger for drinking of spirits. The risk increased with increasing ethanol content of each type of drink. No statistically significant associations were observed with age at start or age at quitting after adjusting for duration. [7]

In Znaor et al's study, a significant dose response relationship was observed between the duration of drinking and average daily amount of ethanol consumption. Among all types of alcohol analyzed, arrack drinkers showed the highest risk, the increase of risk being 7 fold. The consumption of western type spirits did not show a significant increase in risk. [8]

In Trivandrum, India, the authors observed that increased risk was associated with increased amount and duration of alcohol consumption. Dose responses were observed for both frequency and duration of drinking.[9]

It was found that, alcohol drinking had significant predisposing effect on oral cancer in males. Among males, those drinking alcohol more than once daily had an OR 3.19 (95% CI 2.28-6.68), and those drinking alcohol for more than 21 yrs had an OR 4.09 (95% CI 2.21-7.51) when compared to never drinkers. There was a significant reduction in risk associated with late age at starting the habit among males. [10]

A study by Balaram et al, showed a significant trend of increase in oral cancer risk with increasing number of drinks per week (p=0.01). Among the alcohol beverages the highest consumed was toddy, a locally fermented and distilled sap from palm trees. Neither age at start of drinking nor cessation of the habit were related to oral cancer risk.[11]

A Case-control study in Shenyang, Northeastern China by Su et al, with 101 cases and 101 age & sex matched controls, concluded that, men who drank alcohol were at a significantly higher risk for oral cancer, relative to nondrinkers. In men, the risk significantly increased with increasing consumption of alcoholic beverages. [12]

Rosenquist et al, found that, the cases reported a higher consumption of alcohol than the controls. More than 350 g of alcohol per week (OR 2.6; 95% CI 1.3-5.4) was found to be dose-dependent risk factor.[13]

In the study done by Huang et al, the authors examined alcohol concentration and the oral cancer risk in Puerto Rico. Heavy consumers of liquor had strongly increased risks of oral cancer (odds ratio = 6.4) beer/wine showed only modest effects. Among liquor drinkers, risks were consistently greater for those who drank straight (undiluted) liquor than for those who usually drank mixed (diluted) liquor (odds ratio = 4.0). [14]

CONCLUSION

Alcohol drinking was significantly associated with the risk of development of oral cancer. Earlier the age at start of habits, greater was the risk. The risk increased as the dose and the duration of the risk factors increased in a dose dependent relationship. The risk factor is highly amenable for primary and secondary prevention. Adherence to the restrictions on alcohol advertising and promotion, Intensive information education communication activities on harmful effects of alcohol to the public is very important.

Funding: No

Conflict of Interest: None

Ethical Approval: Obtained

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DOI Numher: 10.5958/0976-5506.2018.01317.7

Incidence and Implications of Outpatient Care among the Vendors Employed in Punjab

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ABSTRACT

Ninety percent of the families earn their livelihood from the informal sector and this sector contributes to two-fifths to the GDP of the country. But a large number of workers in informal live and works under unhygienic conditions and do not get health care benefits. Keeping this in mind, the present study examines the economic burden of illness among the vendors. The study was based on the primary data collected form the three urban districts of Punjab: Amritsar, Jalandhar and Ludhiana. Analysis of data has been done with the help of frequency, percentage, mean and median. The result shows that 37.6 percent of the vendors suffered from the illness and majority of them utilized healthcare facility for outpatient care. The main reasons of the outpatient care were cold/cough and cold/fever. Majority of the respondents visited chemist shops followed by government hospitals, RMP/Local doctor, private hospital, private clinic, Hakim/faith healer and homeopathic for outpatient. The mean and median expenditure on treatment was ₹437.84 and ₹ 90 respectively, while mean and median money loss to the respondents was ₹826.92 and ₹400 respectively. The various copying mechanisms to meet healthcare burden were own money followed by help from neighbors, friends, employer and relatives. To sum up, there is an urgent need for public action in building health security into the lives of the poor.

Keywords*: Incidence, Direct cost, Indirect cost, Health Insecurity.*

INTRODUCTION

Health status of the country is the important flag-post to evaluate the success of the state policy[1]. Health of the individuals of the country impacts the growth of the nation in a very material sense. It was estimated that the differences in the growth performance of many countries can be attributed to the health status of their population[2]. Theoretical work as well as empirical evidence clearly shows the positive linkages between the good health and the economic development[3]. The association between poverty and ill-health reflects causality running in both the directions[4]. Poor people are thus caught in a vicious circle: poverty breeds ill-health; ill-health results in impoverishment and indebtedness[5,6]. Therefore, efforts to combat poverty ought to consider the role of health[7].

Health security is recognized as an integral element of poverty alleviation programs across the globe[8]. Health security is defined as low exposure to risk, access to health services and ability to pay for medical care and medicine[9,10]. Health insecurity hampers the ability to work, income and basic human needs. It was documented that a single event of hospitalization accounts 20 to 60 percent of annual income of the household[10,11]. Illness to poor may place at risk either their physical or mental health on the one hand and financial stability on the other[10]. Illness creates impoverishment through income losses and medical expenses which triggers a spiral impact on the asset depletion, indebtedness and cuts essential household consumption[13,14,15,16]. The burden of the health comprised of the direct as well as indirect costs of healthcare. It has been found that besides the direct expenses incurred by workers in the form of medicines, tests, travel charges, etc. the indirect costs associated with illness such as loss of wages added

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to the burden of households[17,18]. Households have to adopt different coping strategies which ranged from selling added resorted ranged assets, borrowing, to cost prevention strategies like ignoring illness and non-treatment. These coping strategies have an adverse effect on the welfare and livelihood of the household. This added to the insecurities of the informal sector households which survive on low wages and uncertain income opportunities[19].

Therefore evidence on the economic cost of illness is essential to evaluate the extent of health insecurities. Keeping this in mind the present paper measures the direct and indirect cost of the illness. To accomplish the objective, the paper has been divided into five broad sections. Section I introduces the types of healthcare cost and its implications. Section II deals with materials and methods adopted in the present study. Section III explained the empirical findings. Section IV concludes the discussion o along with policy implications.

MATERIAL AND METHOD

The study was based on the primary data collected from Punjab. Data has been collected from the three urban districts of Punjab namely Amritsar, Jalandhar and Ludhiana. For the collection of data a structured questionnaire has been prepared. The respondents of the study were 210 vendors selected from three districts of Punjab (Amritsar= 70, Jalandhar=70 and Ludhiana =70). In the present study, workers employed in the informal sector were selected due to the fact that they are more prone to illness and at the same time due to low and irregular nature of income are unable to pay for illness. The respondents within the districts were selected randomly. The economic burden of illness has been analyzed with the help of frequency, percentage, mean and median.

FINDINGS

Table 1 shows the demographic profile of the respondents. It was found that the respondents of up to 30 years were 27.6 percent, 31-40 years 21.0 percent, 41-50 years 27.6 percent, 51-60 years 16.2 percent and 60 years & above were 7.6 percent. Majority of them falls under annual income group of ₹50001- ₹1,00,000. About 78.6 percent of them were married, majority of them were Sikh followed by Hindu. Majority of the respondents were above primary but up to secondary followed by illiterate, up to-primary, without formal education, senior secondary, graduation and post-graduation.

Table: 1: Demographic Profile of the Respondents

Variable	Percent (N=210)
Gender	
Male	94.8
Female	5.2
Age (in years)	
Up to 30 years	27.6
31-40 years	21.0
41-50 years	27.6
51-60 years	16.2
60 years and above	7.6
Annual Income	
Up to ₹50000	9.0
₹50001- ₹1,00,000	69.5
₹1,00,001- ₹1,50,000	19.5
₹1,50,001- ₹2,00,000	1.9
Marital Status	
Single	17.1
Married	78.6
Divorce	1.0
Widow	3.3
Religion	
Sikh	61.0
Hindu	30.5
Muslim	6.2
Christian	2.4
Education	
Illiterate	21.4
No formal education (but can read & write)	6.2
Up to primary (Class 5)	20.0
Above primary, up-to secondary	41.4
Senior secondary school	4.8
Graduate	3.3
Post graduate	2.9

Source: Author's Calculation Based on Primary Survey

Table 2 shows that 37.6 percent of the vendors suffered from the illness and the main reasons of the outpatient care were cold/cough and cold/fever. The results of self-reported severity shows that 45.0 percent of the vendors stated illness was not serious, 31.6 percent stated that illness was quite serious and only 11.4 percent stated that illness was very serious.

Table: 2: Distribution of the Respondents by Type and Severity of Illness

Characteristics	Percent
Type of Illness	
Cold/Cough	38.0
Cold/Fever	27.8
Headache	3.8
Wound	7.6
Malaria	2.5
Typhoid	2.5
Stomach related problem	0.0
Cholera	5.1
Breathing problem	5.1
Chicken pox	3.8
Dehydration	1.3
Diarrhea	0.0
Gastric problem/ Acidity	1.3
Blood pressure	1.3
Total	100
Severity of Disease	
Not serious	45.0
Quite serious	31.6
Very serious	11.4
Total	100

Source: Author's calculations based on primary data.

Note: Primary data has been obtained from three districts of Punjab (Amritsar, Jalandhar and Ludhiana).

* : In the two month reference period.

From table 3 it was found that 93.7 percent of vendors utilized health facility for the outpatient care. It has been found majority of the respondents visited chemist shops followed by government hospitals, RMP/ Local doctor, private hospital, private clinic, Hakim/ faith healer and homeopathic for the treatment. It has been observed that 67.6 percent of the respondents find difficulty in the accessibility of the healthcare facility and the mean and median distance covered to visit health facility was 3.42 km and 3.00 km respectively. Those who have not utilized the healthcare facility stated the main reason was could not get away due to work, minor complaints do not call professional assistance and did not had money.

Table: 3: Distribution of the Respondents by Utilization and Access to Health Facility

Characteristics	Percent
Have you taken treatment for illness*? (N=210)	
Yes	93.7
No	6.3
Total	**100**
Type of health facility visited (N=210)	
Chemist shop	31.1
Government hospital	23.0
RMP/local doctor	14.9
Private clinic	9.5
Private hospital	14.9
Hakim/Faith healer	6.8
Total	**100**
Visited facility was easily accessible? (N=210)	
Yes	67.6
No	32.4
Total	**100**
Distance covered to visit health facility	
Mean distance (km)	3.42
Median distance (km)	3.00
Reason for not seeking care	
Could not get away due to work	40
Did not have money	20

Cont... **Table: 3: Distribution of the Respondents by Utilization and Access to Health Facility**

Minor complaints do not call professional assistance	40
Total	**100**
Any self-treatment taken?	
Yes	20
No	80
Total	**100**

Source: Author's calculations based on primary data.

Note: Primary data has been obtained from three districts of Punjab (Amritsar, Jalandhar and Ludhiana).

* : In the two month reference period.

Table 4 measures the direct healthcare expenditure and the copying mechanism. It has been found that the mean and median expenditure on treatment was ₹437.84 and ₹90 respectively. 77.9 percent of the respondents paid for outpatient care from their own money, 9.1 percent through neighbors, 7.8 percent through friends, 1.3 percent through employer and 3.9 percent from relatives.

Table: 4: Distribution of the Respondents by Healthcare Expenditure and Coping Mechanism

Characteristics	**Percent**
Amount of money spend on outpatient care	
Mean expenditure on treatment (₹)	437.84
Median expenditure on treatment (₹)	90
Coping mechanism	
Own money	77.9
Borrowed from neighbor	9.1
Borrowed from friends	7.8
Borrowed from employer	1.3
Support from relatives	3.9
Total	**100**

Source: Author's calculations based on primary data.

Note: Primary data has been obtained from three districts of Punjab (Amritsar, Jalandhar and Ludhiana).

* : In the two month reference period.

Table 5 reveals the indirect cost of illness and it was found that 15.2 percent of the vendors suffered wage loss due to outpatient care and the mean and median man-days loss was 3.5 and 2.0 days respectively. While the mean and median money loss to the respondents due to outpatient care was ₹826.92 and ₹400 respectively.

Table: 5: Distribution of the Respondents by Indirect Cost of Outpatient Care

Characteristics	**Construction Worker**
Did you take leave / suffer wage loss due to illness*?	
Yes	15.2
No	84.8
Total	**100**
If yes, how many man days did you loss?	
Mean days	3.5
Median days	2.0
How much money did you lose?	
Mean (₹)	826.92
Median (₹)	400

Source: Author's calculations based on primary data.

Note: Primary data has been obtained from three districts of Punjab (Amritsar, Jalandhar and Ludhiana).

* : In the two month reference period.

CONCLUSION

From the above results it has been found that the outpatient care imposed a huge financial burden on the respondent. The respondents not only incurred the direct cost rather the indirect also. This shows that 37.6 percent of the vendors suffered from the illness at the time of the survey and the main reason of the outpatient care were cold/cough and cold/fever. While, 93.7 percent of vendors utilized health facility for the outpatient care and majority of the respondents visited chemist shop followed by government hospitals, RMP/Local doctor, private clinic, private hospital, hakim/faith healer and

homeopathic for the treatment. The mean and median expenditure on treatment of illness was ₹437.84 and ₹ 90 respectively and the respondents adopted different mechanisms to cope up the healthcare expenditure. The respondents also suffered wage loss due to the outpatient care and the mean and median money loss to the respondents due to outpatient care was ₹826.92 and ₹400 respectively. This clearly shows that the indirect burden of illness on the respondents is more than the direct burden of illness. This indicates that respondents were without healthcare benefits and relied heavily on the out-of-pocket healthcare expenditure. This led to tremendous burden on poor household and resulted indebtedness and liquidation of their productive assets. A central focus of the study is that informal sector households without any formal health insurance protection, bears the dual burden of healthcare expenditure as well as loss of income during illness. This is more critical when large proportion of our population is poor and many households were pushed into poverty trap due to catastrophic health expenditure. This widens the health insecurities of the informal sector households which survive on low wages and uncertain income opportunities. This study addressed the key findings to the policy makers to ensure that health safety and financial protection against the impact of illness to informal sector workers. Therefore, deliberate steps must be taken by the government to ensure that health care access is improved and sustained particularly for these income groups.

Ethical Clearance-NA

Source of Funding- Self

Conflict of Interest -Nil

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DOI Numher: 10.5958/0976-5506.2018.01318.9

Awareness of Swine Flu (Influenza H1N1) among the Rural Population of Shamirpet Mandal,Telangana

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ABSTRACT

Background: Swine flu, being a deadly disease is dreaded all over the world, especially in India which was the third most affected country in the 2009 pandemic. Aims &objectives: To estimate awareness, perception &myths regarding swine flu and identify the sources of information among rural population of Shamirpet. **Materials & method:** Cross sectional study was done in February 2015 immediately after an epidemic situation, among randomly selected individuals in a rural population, with a pre-defined questionnaire and data was analyzed using MS excel. **Results:** 92% of the study population has heard of swine flu. Major source of information being the television and the health care professionals were a source to only 9.2% of the entire study population. 80.8% of the population aware that the route of transmission of H1N1 is via inhalation and 83.2% were aware of use face mask to prevent swine flu. **Conclusion:** knowledge regarding swine flu is high among the study population as television is the commonest source of information, health care professionals should help in clearing the misconceptions and educate the population especially during epidemics. As swine flu spreads quickly in its early stages, high level of awareness is important for its containment.

Keywords: *swine flu, prevention, knowledge, myths.*

INTRODUCTION

Swine flu is an alarming disease that is caused by the influenza A virus (H1N1). Initially, H1N1 was a cause of respiratory disease only in pigs and did not affect humans, later, due to close contact it was transmitted from the pigs to human beings. In human beings, this virus infects the lower respiratory tract and causes rapidly progressive pneumonia especially in healthy children, young and middle-aged adults, unlike the other viruses that infect the immunocompromised and old people. Majority of the human population has no pre-existing immunity to it. These outbreaks usually occur in winters. The virus usually spreads from human to human through aerosols, hand to hand transmission by shaking hands and through infected surfaces and rarely from infected pigs to human beings. Its incubation period is 2-3 days [(1)].

Symptoms similar as in seasonal influenza are present like cough, fever (>100f), headache, sore throat, chills, myalgia, rash, weakness and some have pronounced enteric features. These symptoms may eventually progress to severe influenza and death. Mortality is high in presence of co morbid conditions [(2,3)]. Vaccines against the new strain are developed with safety profile like seasonal flu vaccine and knowledge, attitude and practices of people regarding swine flu is the cornerstone in prevention of virus spread and outbreak[(4)].

Till date, two pandemics of swine influenza have occurred, one in 1918 and the other one in 2009. The recent 2009 pandemic began in Mexico and then it spread throughout the world killing around 151,700 to 575,400 people [(5).] Rapid global spread is accounted due to human to human transmission and due to increased frequency of air travel [(6).] As of present the world is in the post pandemic period and the virus is expected to continue to circulate as a seasonal virus for years to come and vigilance on the part of health authorities remains important [(7).]

The rural population of developing countries like India is more vulnerable to this disease because of limited access to medical care, undeveloped public

health infrastructure, low socioeconomic and unhygienic conditions, increased population density and insufficient awareness [8]. Henceforth, this study was designed to assess the knowledge, attitude, awareness and myths regarding swine flu among the rural population of Shamirpet, Telangana.

AIMS AND OBJECTIVES

To assess the knowledge, attitude, myths and practices regarding swineflu among the rural population of Shamirpet mandal, RR district, Telangana.

To reveal the sources of information so that planning can be done and necessary interventions in the field of health education can be taken up effectively.

To know the role of health care providers in spreading awareness about swine flu.

METHODOLOGY

Study setting: A population based cross-sectional study was done in the rural community of Shamirpet, Telangana during the month of February , 2015.

Sample size: using systematic random sampling 250 households were selected and one person per house (preferably head of the household) was interviewed. Those people not willing to participate were excluded.

Inclusion criteria: Both men and women who were willing to participate were included in this study.

Data collection and Analysis: After clearance from the institutional ethics committee and after taking written informed consent participants were interviewed using a pretested and structured questionnaire to elicit the knowledge, attitude and practices of the study population. Complete anonymity was maintained and following this a statistical analysis was performed.

RESULTS AND OBSERVATIONS

The overall study population was 250 and out of 250, 111 were males and 139 were females. Majority of them heard about swine flu disease (92%) and only 8% were unaware of swine flu.

Table I. Distribution of Population basing on Awareness of H1N1

Awareness status	Frequency	%
Aware	230	92
Unaware	20	08
	250	100%

Table II. Distribution of study population basing on awareness of symptoms of H1N1

Aware of Symptoms (yes/No)	Frequency (Each symptom out of 250)	%
Fever	209	83.6
Cold	208	83.2
Cough	206	82.4
Headache	133	53.2
Body ache	133	53.2
Breathlessness	51	20.4
Vomiting	102	40.8
Loose stools	76	30.4
Don't know	38	15.2

Majority of respondents characterized fever as a symptom of swine flu (83.6%), followed by cold (83.2%), cough (82.4%), headache (53.2%), body ache (53.2%), breathlessness (20.4%), vomiting (40.8%) and loose stools (30.4%). 15% of respondents, don't know the symptoms of swine flu

Table III. Distribution of study Population according to route of transmission

Route of Transmission (yes/no)	Frequency (each out of 250)	%
Inhalation	202	80.8
Pigs	67	26.8
Food	40	16
Water	49	19.6
Pork	19	7.6
Mosquitoes	82	32.6
Houseflies	53	21.2
Others	5	2.4
Don't know	42	16.8

Most of them (81%) identified inhalation as the route of transmission for H1N1, followed by through mosquitoes (32.6%), through pigs (26.8%), through houseflies (21.2%) and through water (19.6%). 17% of respondents were not aware of any route of transmission of H1N1.

Table IV. Prevention measures applicable to Swine flu

Prevention measure	Frequency (each out of 250)	%
Mask	208	83.2
Personal Hygiene	186	74.4
Fresh food	52	20.8
Avoiding crowds	116	46.4
Avoiding handshakes	31	12.4
Killing pigs	60	24
Ayurvedic medicine	6	2.4
Homeopathy	61	24.4
Unaware	34	13.6

Common preventive measures like use of mask and personal hygiene was known to 83.2% and 74.4% respectively. 46.4% responded that avoiding crowds is an important precautionary measure against swine flu, 20.8% claim that eating fresh food helps prevent swine flu, 24% have belief that killing pigs will stop the spread of the swine flu, 2.4% and 24.4% believe that swine flu can be prevented by Ayurvedic and homeopathic medicines respectively. Only 13.6% were unaware of preventive measures of swine flu.

Table V. Distribution of study population, basing on availability of vaccine for swine flu

Vaccine	Frequency	%
Available	87	34.8
Not available	22	8.8
Unaware	141	56.4
Total	**250**	**100%**

Only 34.8% were aware that swine flu vaccine is available for prevention of swine flu and 56.4 % were unaware of availability of H1N1 vaccine and only 1.2% of them had taken it (3 out of 250).

In case of symptoms 34.4% of them are willing to go to a government hospital for treatment while 45.6% said that they will consult in a private hospital and 20% to the local practitioners.

Table VI. Distribution of Study Participants according to approach of treatment in H1N1

Approach of treatment	Frequency	%
Government Hospital	86	34.4
Private Hospital	114	45.6
Quacks	50	20
Total	**250**	**100%**

The most common source of information for 84% of the population was found to be television, in 36.4% it was newspaper, in 10.4% it was radio, in 23.2% it was local gossip and in 9.2% it was by the healthcare providers.

Table VII. Distribution of study Participants according to source of Knowledge regarding H1N1

Source of Knowledge (yes/No)	Frequency (each out of 250)	%
Television	210	84
News Paper	91	36.4
Through Neighbors or friends	58	23.2
Radio	26	10.4
Health care Provider	23	9.2

Table VIII. Distribution of study Participants according to spiritual basis for H1N1

Spiritual basis of H1N1 causation	Frequency	%
Yes	19	7.6
No	231	92.4
Total	**250**	**100%**

Table IX. Distribution of study Participants depending on scaring for H1N1

Scared of H1N1	Frequency	%
Yes	146	58.4
No	104	41.6
Total	**250**	**100%**

146 (58.4%) of the respondents are scared by swine flu and the main reasons for considering H1N1 as scary is Deadly disease (141, out of 146) and other reasons are no treatment [3] and no vaccine [2]. 7.6% of the study population believe that there is a spiritual basis to this disease.

DISCUSSION

This epidemiological study is the first of its kind in the state of Telangana in India as per our knowledge. However, a few comparable studies exist that are from other states and other countries.

In this study 92% of the participants are aware of swineflu which is more than that found in similar studies. In similar studies done by Kawanpure etal in Kerala [9] and Jhummon-Mahadnac N et al[10] done in punjab showed 85.2% and 88% respectively. The most common symptom of swine flu known to the respondents was fever (83.6%), whereas cough was known to 82.4% and cold to 83.2%, while in similar study conducted in Kawanpure etal in Kerala [9] showed fever was known as a common symptom to 71.4%, cold and cough to 62.4%.

In this study major source of information for 80% is television which is comparable with the finding of similar study conducted by Sumeet singh et al in Patiala which showed 76% [11].

In the present study, 80.8% of the participants reported respiratory route as the mode of transmission and this finding was lower in other studies done by Kawanpure etal in Kerala showed 56.3% [9], and Jhummon-Mahadnac N etal study in punjab showed 54%[10]. Sumeet singh et al study in Patiala showed 54% in Patiala [11] and Chaudhary etal study in Bareilly identified respiratory route as mode of transmission in H1N1 among 77.2%[12].

In this study 83.2% mention the use of facemask as a way of prevention from swine flu whereas personal hygiene which is the commonest measure was known to 46.4%. These findings are comparable to the findings of the study conducted by Kawanpure etal in Kerala showed Face mask and personal hygiene as preventive measures in 70.42% and 31.9% respectively [9]. In contrast to our study, a study done by Rubin et al showed face mask and Hand washing as known preventive measures for H1N1 transmission in 24.3% and 87.8% respectively [13].

In present study, 34.8% were aware of availability of vaccine which is less than that found in study done by kawanpure et al in kerala which showed 55.86% were aware of H1N1 vaccine availability [9].

CONCLUSIONS AND RECOMMENDATIONS

The government should continue IEC activities through television to create awareness regarding swine flu as it is the commonest source of information. H1N1 vaccine should be advertised and the population should be motivated to take it. The role of health care professionals in spreading awareness was found to be low and as they are closer to the community, they should maximize their efforts in giving health education and in clearing the misconceptions related to swine flu. Measures should be taken by the government to improve the public health infrastructure and facilities and increase accessibility of medical care.

Source of Funds: Self

Conflict of Interest: Nil

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DOI Numher: 10.5958/0976-5506.2018.01319.0

Factors Affecting Investor's Perception of Mutual Fund Investment W.R.T Andhra Pradesh

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ABSTRACT

Investment in mutual funds is effected by the perception of the investors. Statement of the problem is 'size of investors with small savings has been growing rapidly, yet they are having little expertise and they are novice in choosing mutual funds schemes'. Financial markets are constantly becoming more efficient by providing more promising solutions to the investors and some factors influencing success of mutual fund. Hence, there is a need to study investor's perception regarding the mutual funds. Primary data was collected by canvassing structure questionnaire and collected pertinent data from 632 respondents. The respondents have been selected based on the judgment sampling technique, and sample spread over erstwhile Andhra Pradesh in three regions of Andhra, Rayalaseema and Telengana. Hypotheses have been tested using analysis of variance (ANOVA) and Chi-square. The analysis finding suggest that majority of investors perception about mutual funds and are willing to invest in mutual fund. Most preferred scheme is star rating schemes. The study was conducted during 2011-2015.

***Keywords**: Mutual funds, Investors, Investments, Perception*

INTRODUCTION

There are many investment avenues available in the financial market for an investor. Investors can invest in bank deposits, corporate shares, debentures & bonds, post office saving schemes etc. Generally an investor considers three fundamental factors viz. liquidity, profitability and safety of investment. Universal fact is that, under normal circumstances if one takes more risk he/she gets more return. They may invest in stock of companies where the risk is high and sometimes the returns are high. For retail investors, who do not have the time, expertise to analyze and invest in stock market, mutual funds is a viable investment alternative. This is because mutual funds provide the benefit of cheap access to expensive stocks.

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A mutual fund is a collective investment vehicle, formed with the specific objective of raising money from a large number of individuals and investing it according to a pre specified objective, with the benefits accrued to be shared among the investors on a pro-rata basis in proportion to their investment.

According to Securities and Exchange Board of India Regulations, 1996 a mutual fund means "a fund established in the form of trust to raise money through the sale of units to the public or a section of the public under one or more schemes for investing in securities, including money market instruments".

A mutual fund company is the one that brings together a group of people having common investment objective and invests their money in stocks, bonds, and other securities. Each investor owns units, which represent a portion of the holdings of the fund.

One can make money from a mutual fund in following ways:

Income is earned from dividends on stocks and interest on bonds. A fund pays out nearly all income it

receives over the year to fund owners in the form of a distribution.

If the fund sells securities that have increased in price, the fund has a capital gain. Most funds also pass on these gains to investors in the form of dividends.

If fund holdings increase in price but are not sold by the fund manager, the fund's shares increase in price. You can then sell your mutual fund units for a profit.

Funds will also usually give you a choice either to receive dividends or to reinvest the same and get more units.

REVIEW OF LITERATURE

The available literature to the present study has been reviewed to understand the work done so far by different researchers.

Yamal Vyas (2010)[1] in his research *'Know How To Invest Successfully In Mutual Funds',* examined the retail investors, he says that, the retail investors have taken great fancy to the *systematic Investment Plan* and it seems that every middle class household has a SIP investment.

Nanadhagopal, Varadharajan, Ramya, (2012)[2] in their article *A Study on the Performance Evaluation of Mutual Funds in India (Equity, Income and Gilt Funds).* In this study, three categories were chosen such as Equity, Income and Gilt Funds. Four mutual fund schemes from each category were selected for evaluating their performance during the period 2006-2009. Suggestions given at the end will help the investors to sort out the errors committed by them in making investment decisions.

Satya Sekhar.G.V. (2013)[3] in this article *"Role of Indian Mutual Funds in Financial Inclusion"* the mutual fund organizations are taking active part in financial inclusiveness and they are promoting investment habit among the investors.. In this context, this paper is intended to examine the role of mutual fund organization in financial inclusiveness with reference to performance through public and private sector.

OBJECTIVES

The present study is undertaken with the following specific objectives

To assess the perception of investor's towards mutual fund and factors effecting the investor's investment decisions.

To identify the problems of investors in investing their money in mutual fund scheme.

To analyze the investors level of fulfillment regarding mutual fund.

4. To examine the pattern of investment in Andhra Pradesh (regions of Andhra, Rayalaseema and Telangana).

5. To study investors preference with regards to mutual fund v/s other investment products.

RESEARACH METHODOLOGY

The purpose of this research is to contribute towards a very important aspect of financial services known as Mutual Fund. The investor perception regarding mutual fund investment has been carried out through a questionnaire survey in Andhra Pradesh. Objective behind selecting this, is to find out whether common man knows about mutual funds and their invest in mutual funds and the factors he / she considers while investing in mutual funds.

Collection of data and sample

This study is based on only primary data sources. For the studying the perception of investors has been administered of structured questionnaire of the respondents. 632 respondents have been selected for this study, for Andhra Pradesh only. Hypothesis is tested using analysis of variance (ANOVA) and Chi-square The analysis finding suggest that majority of investors perception about mutual funds and are willing to invest in mutual fund. Most preferred scheme is star rating schemes.

Table 1: Distribution of sample of investor's regions wise respondents of Andhra Pradesh state

Regions	Respondents
Andhra	193
Rayalaseema	218
Telangana	221
Total	**632**

Source: (Field survey 2013-14)

Total 632 respondents are taken for study in Andhra Pradesh

Table.2 Factors influencing the investing in Mutual funds:

Factors	Very important	Percent	Important	Percent	Not important	Percent	Not at all important	Percent
Capital appreciation	424	65.53%	177	27.36%	13	2.01%	18	2.78%
Objective of the fund	228	35.24%	338	52.24%	52	8.04%	14	2.16%
Return on investment	281	43.43%	242	37.40%	81	12.52%	28	4.33%
Tax benefit	255	39.41%	285	44.05%	73	11.28%	19	2.94%
Liquidity	227	35.09%	308	47.60%	83	12.83%	14	2.16%
safety	324	50.08%	239	36.94%	52	8.04%	17	2.63%
Loan facility	225	34.78%	303	46.83%	81	12.52%	23	3.55%
Convenience of reinvestment	172	26.58%	313	48.38%	123	19.01%	24	3.71%
Fund managers background	233	36.01%	264	40.80%	115	17.77%	20	3.09%
Early bird incentive	126	19.47%	304	46.99%	160	24.73%	42	6.49%

Source: (Field survey 2013-14)

From the above table it can be observed that majority of respondents are given priority to very important factor is 'capital appreciation' with 52.54%, important factor is 'objective of the fund' with 65.82%, not important factor is 'early bird incentive' with 24.73% and not at all important factor is 'early bird incentive' with 6.49%

DATA ANALYSIS

Table .3 A Study of relationship among regions and choice of mutual funds*:*

Regions	Equity fund	Debt fund	Balanced (Mixed) Fund	Gold ETF	Fund of funds	Total
ANDHRA	54	45	31	22	41	193
RAYALASEEMA	91	63	10	27	27	218
TELANGANA	53	24	62	52	30	221
	198	132	103	101	98	632

Source: (Field survey 2013-14)

ANOVA test

H0: There is no significant difference in choice of mutual funds among the respondents of three regions

H_1: There is significant difference in choice of mutual funds among the respondents of three regions

Calculated F value 0.0947, Degrees of freedom (2, 12),

Table value 3.8852 levels of significance 5%

From the table it is clear that calculated value is less than table value. So we accept null hypothesis. Hence we can conclude that there is no significant difference in choice of mutual funds among the respondents of three regions

Table.4 A Study of relationship among region and investment objective:

Regions	Capital Preservation and Satisfactory current income	First Priority for Income and Second Priority for Growth	Balanced Preference for Income and Growth	Basically Growth oriented but intends to play it somewhat safe	Maximize growth as income is not Critical and liquidity	Total
ANDHRA	21	88	61	17	6	193
RAYALASEEMA	35	115	40	22	6	218
TELANGANA	23	70	107	11	10	221
Total	**79**	**273**	**208**	**50**	**22**	**632**

Source: (Field survey 2013-14)

ANOVA test

H0: There is no significant difference in investment objectives among the respondents of three regions

H_1: There is significant difference in investment objectives among the respondents of three regions

Calculated F value 0.0295, Degrees of freedom (2, 12),

Table value 3.8852 levels of significance 5%

From the table it is clear that calculated value is less than table value. So we accept null hypothesis. Hence we can conclude that there is no significant difference in investment objectives among the respondents of three regions

Table 5: Relationship among regions and knowledge of mutual funds:

Regions	Yes	No	Total
ANDHRA	172	21	193
RAYALASEEMA	173	45	218
TELANGANA	168	53	221
Total	**513**	**119**	**632**

Source: (Field survey 2013-14)

Chi square test

Ho: there is no significant difference in knowledge of mutual funds among the respondents in different regions

H1: there is significant difference in knowledge of mutual funds among the respondents in different regions

Calculated chi square value 12.286, Degrees of freedom 2,

Table value 5.991 levels of significance 5%

The null hypothesis is rejected. From the table it is clear that calculated value is greater than table value. So we can conclude that there is significant in knowledge of mutual funds among the respondents in different regions

FINDINGS

From demographic profile of respondents, it is found that majority (58.06%) of respondents belongs to the age group of bellow 30 years and sample is dominated (76.42%) by male respondents, professionals (28.32%) are more in number, majority (62.34%) respondents their qualification is graduation and post graduation, majority (56.42%) of them are married. 48.73% of the respondents have monthly income close to Rs.20000, and 49.21% of the respondents are saving about Rs.2000 per month.

Financial needs of investment, Large (34.65%) of respondents "Depend on investments for income and earning needs" less (5.85%) respondents are "don't depend on investments".

Willingness to take risk large (44.94%) number of respondents is "willing to take moderate risk". The returns are more than market rate of interest they are ready to invest huge amount.

As far as safety is concerned, majority of respondents (82.59%) found to be safe Bank deposits, reasonable

safety investments are (51.27%) Post Office saving schemes, mutual funds and equity shares.

Knowledge of star rating mutual funds. Majority of respondents (73.89%) having knowledge of star rating mutual funds.

FINDINGS WITH ANOVA AND CHI SQUARE TEST

A study relationship among regions and investment objective. The hypothesis tested with ANOVA. The test is accepted to null hypothesis. In this test large (43.19%) number of respondents' objective is 'first priority income and second priority for growth'. Among the regions large (18.2%) number respondents from Rayalaseema region.

A study relationship among regions and choice of mutual funds. The hypothesis tested with ANOVA. The null hypothesis is accepted. In this test large (31.33%) number respondents are interested 'equity funds'. Among the regions large (14.4%) number of respondents from Rayalaseema region.

A study relationship among regions and knowledge of mutual funds. The hypothesis tested with chi square. The null hypothesis is accepted. In this test large (81.17%) number respondents are interested 'yes'. Among the regions Andhra and Rayalaseema respondents are equally same perception.

SUGGESTIONS

Based on the analysis and findings of the study, the following suggestions have been made which would help the mutual fund as well as mutual fund investors.

A. For Mutual Fund Companies

To attract the younger generation into the mutual fund industry, mutual fund companies should conduct awareness programmes in colleges, professional college, universities, body of offices, clubs in corporate office, and Government departments etc., it will educate the young investors. Asset management companies and SEBI should organize more seminars, training programmes to investors especially during market fluctuation, economic recession, new products introduced in the market. It reduces the confusion of investors and creates confidence about the market.

Necessary training programmes should be arranged to the financial advisors, agents and distributors it progress investments the training programmes through NISM, NSDL and AMFI. AMFI should take care about the certification of financial advisors and the certificate should be renewed once in 3 years instead of 5 years

Investors are interested in star rating and equity funds; it will increase risk which may be one of the major factors that discourages investors from committing fresh funds in the market. Hence appropriate risk awareness programme through print and visual media should be provided to improve the risk perception of investors.

Mutual fund companies should launch new and innovative schemes according to the varied needs of the investors. There is a lack of innovative products in the market. People have the capacity to invest and this capacity has to be explored by the mutual funds companies. With the increasing awareness among the retail Investors about capital markets, the mutual Fund Companies should come with innovative schemes to fulfill the requirement of the retail investors.

B. Suggestions to investors'

A Mutual fund investor should be aware of his rights. The agents or financial advisors should make investors aware of their rights as per the SEBI (Mutual funds) regulations & regarding AMFI. A unit holder in a mutual fund scheme governed by the SEBI (Mutual funds) regulations is entitled to:

Receive unit certificates of statements of accounts confirming the title within 6 weeks from the date of closure of the subscription or within 6 weeks from the date of request for a unit certificate is received by the mutual fund.

Receive information about the investment policies, investment objectives, financial position and general affairs of the scheme.

Receive dividend within 42 days of their declaration and receive the redemption or repurchase proceeds within 10 days from the date of redemption or repurchase.

CONCLUSION

Investors' perception is mainly focused on financial investment. Young and small saving investors are interested to invest mutual funds. Young investors are interest in invest star rating mutual funds with equity fund, tax benefit schemes and they are ready to take

moderate risk to get best returns. Therefore mutual fund companies are concentrate star rating schemes volume of business and controlling of risk they suggest to SIP for the development of their investor's capital appreciation as well as their company's developments

In today's volatile financial market environment, mutual funds are looked upon as a transparent and low cost investment vehicle, which attracts a fair share of investor attention helping the growth of the industry. AMCs concentrate fulfilling customer needs. As customers seek trusted advisors, the manufacturer-distributor-customer relationship is expected to be centered not on the sale of products, but for collectively promoting the financial success of customers across all facets of their professional and personal lives. This requires creating a collaborative network of experts in funds management and financial advice, innovative product offerings, efficient service delivery and supporting technology. The mutual fund industry today needs to develop products to fulfill customer needs and help customers understand how its products cater to their needs. Performance of the industry has been strong and it is well-placed to achieve sustainable growth levels. The way forward for the next couple of years for the mutual fund industry would be influenced hugely by the journey undertaken till this point of time and the changing demographic profile of investors.

Conflict of Interest: Nil

Source of Funding: Self

Ethical Clearance: Nil

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DOI Numher: 10.5958/0976-5506.2018.01320.7

Local Governance and Management of Health Care Services: A Community based Case Study in Rural Odisha

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ABSTRACT

Close to 700 million people live in rural areas where the condition of medical facilities is deplorable. In the context of maternal health and reproductive health care, which are the major concerns of human development goals, the important question is about the reach, accessibility, and affordability of these services to the people living in rural areas. As such the well-being of the villagers depends to a great extent on the efficacy of the gram panchayat. In view of the importance of health as a critical input for human development, the present case study aims to look at the different ways the gram panchyat members' function and involve in areas of health, hygiene and sanitation. A case study of three villages under female and male headed panchayats in Kalahandi district of Orissa is undertaken to understand the involvement of local self-government in the management and delivery of public health services.

Keywords *– PRIs, Health Care, Rural Odisha*

INTRODUCTION

Improvement in the standard of living and health status of the population has remained one of the important objectives in Indian planning ever since India gained independence. As a part of the community development programme, India was one of the pioneers in health service planning with a focus on primary health care to promote, prevent, curate and rehabilitate health services to entire rural population [1].

Close to 700 million people live in rural areas where the condition of medical facilities is deplorable. In the context of maternal health and reproductive health care, which are the major concerns of human development goals, the important question is about the reach, accessibility, and affordability of these services to the people living in rural areas. As such the well-being of the villagers depends to a great extent on the efficacy of the gram panchayat [2].

Despite the central and state governments initiating measures to involve communities and stakeholders in the provision of basic healthcare services over the years, yet in reality, the community participation of grassroots level bodies has been virtually absent, when it comes to health development and this is where the panchayats play a crucial role.

PRI's and Health Care

As primary healthcare is a subject of local self-governments, the gram panchayat is said to be the first level of contact point for the grass root level workers with local governance at the village. Research studies show that deliberations of health issues in the Gram Sabha leads to improved health for both men and women and reduction in their private health expenditures as well [3]. As panchayats are linked to block and district level institutions, they play a decisive role in the programmes for reproductive health, child health and nutrition through community participation [4]. Moreover the involvement of the Gram Panchayat in the selection of the ASHA, holding the untied funds with ANM, leading the Village Health and Sanitation Committee etc. links the panchayat very close to maternal and child health issues.

Role of Women Leaders in Health Services

Women PRI members, participate actively in immunization of children, in organizing health camps, and mobilizing women for accessing health and nutrition services. By working closely with adolescent girls and women, women PRI members prove to be powerful allies for campaigns against early marriage and teenage

pregnancy as well [5].

Pierson (2013), in his study on gender analysis of health policies in South Asia found that women who gain political power through gender quotas often act as the catalysts for improved health in their societies. Women who have been in positions of power are more likely to promote girl child education and child health in the form of immunization[7]. Beamans' study showed that seat reservations for women in village governments are positively related to a child between the ages of 1 and 5 being fully vaccinated. They also identified a statistically significant relationship between reserved seats for women in village governments and more water taps and hand-pumps. This means that women invested more in terms of funding and delivery of safe drinking water relative to men.

For example, women leaders in Rajasthan and West Bengal invest more resources on drinking water facilities and roads, suggesting that the gender of policymakers has an impact on policy choices. Bhalotra and Clots-Figures (2011) found that seat reservations in India are positively associated with increased investment in MCH, specifically more antenatal visits, higher probabilities of breastfeeding in the first 24 hours following childbirth, giving birth in a public facility, and full immunization by age one. Village women find it easier to approach women representatives about issues that directly impact their lives, as compared to male elected representatives[9].

MATERIAL AND METHOD

In the above backdrop, the present paper documents the findings of a case study research conducted in three randomly selected villages in Koksara block in Kalahandi district of Orissa with an objective to understand the status of health care services and the involvement of local self-government in the same. Two villages were selected from a female headed GP and one village headed by a male sarpanch was purposefully selected for comparison purpose. All the villages under study were tribal dominated villages.

Background information of the Villages by No of Households, Sex Distribution of the Population and by Social groups.

Villages	No of HH	Total Population		Total Population (OBC)		Total Population (SC)		Total Population (ST)	
		Male	Female	Male	Female	Male	Female	Male	Female
Phupgaon	781	1522	1605	240	215	129	160	974	1009
Birimuhaan	183	407	408	67	73	56	56	335	337
Kashibahal	941	1691	1844	197	243	173	141	352	378

Tools of Data Collection

The information was primarily gathered through face to face interviews with the sarpanch, the ward members, anganwadi workers, community leaders, ASHA's and representatives of women SHGs to understand the health situation in the village through a well-structured interview guideline keeping in mind the objectives of the study. Key informant interviews, field observations and focused group discussions were held for a deeper understanding of health issues and the involvement of the panchayats. All the information was recorded through voice recorder and later elaborated in the form of notes. The interviews were mostly conversational with movement from one topic to another based on probes.

FINDINGS

Involvement of the Gram Panchayat in Health Care

Panchayat members play a crucial and significant role in monitoring and delivery of public health services. To understand this, interviews were held with the sarpanch, the ward members, the anganwadi worker and other key informants with aspects related to management of illnesses, sanitation, drinking water, maternal and child health and hygiene issues.

It is observed that nearly all the activities concerning health, are monitored by the village health functionaries such as ANM and the ASHA along with the anganwadi workers. Apparently health and hygiene is not prioritized

as development issue requiring any intervention by the gram panchayat members. Hence no initiatives, to organize health/medical camps, were organized by the panchayat at the village level officially. On a personal basis, one of the lady sarpanch, who earlier served as a community health worker, counsels and advises the adolescent girls in the village, on simple measures for disease prevention such as washing hands before serving and eating food and after defecation, maintaining menstrual hygiene etc. Apparently the advices rendered fall into deaf ears as according to her, young girls continue using unhygienic methods during menstruation largely due to lack of awareness about possible health problems.

Awareness about Village Health, Sanitation and Nutrition Committee (VHSNC)

One of the key elements of the National Rural Health Mission is the constitution of village health, sanitation and nutrition committee (VHSNC) which is also commonly known as *gaon kalian samiti* in Odisha, one that addresses issues related to health and takes leadership in providing a platform for improving health awareness among the community. The researcher observed that the village health sanitation and nutrition committee is almost non-functional in the villages under study. The panchayat members could barely speak to the researcher on VHSNC, and the way they are linked with delivery and management of health services. The village head was unaware of the composition of the members constituting the committee and their responsibilities in delivery of services. The sarpanch was not informed about the meetings neither had any knowledge about the way the money was spent. The ASHA worker in the villages under study was not even aware of the existence of such a committee.

On further probing, it was found that neither a village health plan was developed to assess the health priorities of the community nor a village health register existed at the time, the interviews was conducted. According to the District Level Household and Facility Survey (2007-2008) only 3.3 percent villages in Orissa formed a health and sanitation committee and only in 11 percent villages the pradhan or any of the panchayat member was aware of the untied fund. GP memebrs had limited knowledge about the untied funds and its utilization.

Awareness about Government Sponsored Health Schemes

The gram panchayat members, were poorly informed about government health schemes (central & state). The generally held notion about health was that it is in the jurisdiction of the ANM, and that as panch members, that's not something they have to focus on. The GP members do not even know much about NRHM and its work. Key informant interviews, show that village panchayat is not involved in a major way in the health development of the village. Although immunization of children and pregnant women has increased over the years, simultaneously there has been continuous ignorance towards hygiene and sanitation issues. Startegies for mobilizing the community and involving health workers , for greater awareness on health and hygiene, has never been initiated. There is hardly any interaction between the village health functionaries and the gram panchayat members. As health is least prioritised, the village health plan is mostly ignored.

Women leaders are more likely than men to bring issues of maternal and child health to the forefront. Strangely the woman sarpanch in the GP under study was least enlightened on these issues. Hence the involvement in terms of monitoring the work related to MCH services was considerably lower.

Concerns of Anganwadi workers

According to the anganwadi workers, the village gram panchayat, showed little interest in the functioning of the AWCs. The difficulties and constraints faced by anganwadi workers are never discussed in gram sabha meetings. The anganwadi workers are often not informed about such meetings as a result they do not bother to inform the panch members about the problems faced in the anganwadi. Apparently there was a disconnect between the village panchayat and the anganwadi workers in the village.

Adolescents health and hygiene

Mobilizing the adolescents on health issues, and personal hygiene has been attempted to some extent by the female sarpanch individually on a personal basis. Training courses on menstrual hygiene and use of sanitary napkins, were also undertaken with the help of a local NGO. It was reported that adolescent girls lack basic knowledge on simple preventive measures for

good health such as washing hands with soap and water before eating and serving food, and after defecation. Panchayats per se have not taken any intiative in this regard. Early age at marriage is still a concern in the area. Girls are married off at an early age of 11 to 12 years, as soon as they attain menarche.

Interviews with the health personnel's at the community health centre revealed that malnutrition and anaemia are common among young children, adolescents and lactating women in the entire block. Malaria, diarrhoea, tuberculosis are other major illnesses. Neonatal deaths among children occur primarily due to diarrhoea. The panchayat members expressed their concern about this and said that village health workers monitor the cases and accordingly refer them to the closest government health facility. As health is not considered a primary concern for the development of the village, the local government at the village level shows minimal interest in understanding the causes and repercussions of such illnesses for the community.

Findings from FGDs with village women

FGDs with community women revealed that panchayat interventions in the area of health and sanitation was virtually absent. Health camps are never organized, neither any discussion on sanitation and hygiene practices conducted in the community. There was a need felt for greater panchayat interventions, along with NGOs to spread awareness among adolescent's girls and pregnant women about nutrition and ways to prevent anaemia as is commonly prevalent among lactating women in the community. Though ASHA workers actively mobilize the community for ensuring 100 percent institutional deliveries, absence of public transport facility makes it difficult and time consuming to approach government health personnel's located distantly.

In the opinion of the anganwadi worker, the GP members, rarely take any interest in connection to women and child health issues. There are no formal meetings held with GP members nor is she informed about the meetings. According to her, if the panchayat at the village level is involved in a larger way in issues regarding women and child health, the entire community would benefit. In the absence of health camps and campaigns to generate awareness, on health and hygiene, she expressed her concern by stating that in such situations "*how will poor illiterate people will know and learn"*. In the words of one of the female health functionary in the village who has been working there for past couple of years "*if the sarpanch take some interest, to see how anganwadis function what difficulties are there , I would feel happier and satisfied"*. It was reported that anganwadi workers are burdened with lot of work, with minimal human resources, and the gram panchayat is hardly involved or bothered to ask.

Interviews with the higher development officials revealed that though there is a constant reminder to the gram panchayat members to hold meetings jointly with the village health functionaries and have an health agenda, and have an open dialogue with them on health and hygiene issues, yet such meetings are rarely conducted resulting in poor hygiene and health of the community. Health is not prioritized as development concern. Very few are also aware of the different health schemes and entitlements.

Treatment seeking through traditional healers

Quacks popularly known as ***"kabiraj"***are first visited for seeking any treatment. Every village has a "*devataa"* or a *"devi"* a person who is believed to possess supernatural powers. Such persons are deeply revered and worshipped by the villagers. There is a belief that treatment provided by government doctors free of cost, will not be effective, hence quacks are first preferred for treatment of any illness, before approaching public health providers.

Open defecation and sanitation practices

Open defecation is commonly practiced in the villages. Due to scarcity of water and religious reasons the villagers do not favour attached toilet at home. Most of the time the constructed toilet space is used for keeping cattle's, fodder, and other unusable items. According to the key informants the community do not feel a sense of "**owning their toilets**" and therefore do not maintain them well. In the words of the sarpanch, open defecation is a practice since ages, which she describes as "*abhyas*" (practice) that is difficult to give up. Women and girls are hesitant to use toilets attached to their homes. In this context the gram sabhas can play a key role in motivating and encouraging the community to have toilets attached to homes as a sign of good sanitation practice.

DISCUSSION & CONCLUSION

Panchayats in the context of the study area are not

empowered with the understanding and mechanisms required for them to play their role in governance of health and enable communities through their leadership to take collective action for the attainment of better health status in the village. Owning to their educational backwardness and lack of awareness rural people in general do not readily accept modern practices and habits related to health and hygiene. Quacks and informal health care providers are initially approached for treatment due to lack of public transport facility leading to unnecessary expenditure.

Sensitizing the GP members towards health, hygiene, and sanitation is imperative to enable them to play a more proactive role in improving community health and hygiene. It is recommended that health camps should be organized once in a quarter in the GP headquarters for addressing the health concerns of the community. Exposure visits to model villages could be one ways to generate awareness and develop a sense of responsiveness and understanding the importance of health and hygiene. Government schemes and interventions will bring a positive impact only when the mind sets are changed. Village Health and Sanitation Committee (VHSC) have to be more proactive in their functioning. A woman sarpanch should be extended all support to execute the key issues of health and sanitation keeping in mind the needs of women and girls and lastly sensitizing the villagers for demanding quality health services especially for women and evolving a gender-sensitive environment in the village is important and requires involvement of the Panchayats in a bigger way.

Note: The author is grateful to National Institute of Rural Development and Panchayati Raj for funding the study. The research has been conducted after necessary clearance from the ethical committee NIRDPR.

Conflict of Interest: Nil

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DOI Numher: 10.5958/0976-5506.2018.01321.9

Incipient Study to Control LDPE Pollution by *Streptomyces Werraensis* SDJM from Garbage Soil

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ABSTRACT

Low density polyethylene (LDPE), a synthetic polymer plays a key role in day today life, it persist for long time when disposed and cause environmental pollution, potentially harming human life and aquatic habitats. The main aim of the present manuscript is to isolate and identify a potent isolate degrading LDPE from garbage soil and perform analytical studies to check the efficiency of degradation. The degraded LDPE is studied based on DSC, FTIR, GSM and XRD analysis after one month of incubation by *Streptomyces werraensis* SDJM which has been isolated from garbage soil. In Differential scanning calorimeter (DSC) the melting temperature of the LDPE sample is reduced to 3.78% , in Gram per square meter (GSM) analysis the LDPE sample weight is declined to 17.1%, in X-ray diffraction intensity of absorption is decreased to half of its value when compared to control at 21.4 and 23.5 peaks of angular interval (2) and in FTIR analysis the intensity of carbonyl band is decreased at 1000-1800cm^{-1}.Based on analytical results it confirms *Streptomyces werraensis* SDJM is a potent isolate from garbage soil in degrading LDPE.

Keywords: *Streptomyces werraensis SDJM, DSC, GSM, FTIR, XRD, Biodegradation, LDPE*

INTRODUCTION

Polyethylene is used in various fields ranging from food industry, pharmaceutical industry, and agriculture etc. There are two varieties of plastics; natural plastic and synthetic plastics. Low density polyethylene, a synthetic plastic is the most common plastic in world wide. Each year, an estimated 500 billion to 1 trillion plastic bags are consumed worldwide [(1)]. Polyolefin or saturated polymers have a broad range of applications. Polypropylene (PP) and polyethylene (PE), expressed as C_nH_{2n} are most widely used linear hydrocarbon polymers [(2)]. Polyethylene is totally linear and available with varying range of densities from 0.91 to 0.97g/cm^3. LDPE has branching at random places leading to low packing of the polymer chains, whereas high density is more linear with minimal branching leading to high packing density[(3)].

Disposable of LDPE after usage creates huge environmental pollution and health hazards. After their use, these packaging materials are dumped in landfills leading to pollution since they are non-biodegradable under natural environmental conditions [(4)]. These plastics are characteristically inert and are resistant to microbial attack, leading to their accumulation in the environment [(5)]. Disposal of polyethylene through incineration releases toxic chemicals mostly Volatile organic compounds like polycyclic aromatic hydrocarbons (PAHs), polychlorinated dibenzofurans (PCDFs) and dioxins. These VOC's are carcinogenic in nature and travels thousands of kilometres in the atmosphere [(6)].

The biodegradation of plastic waste and the use of microorganisms to degrade the polymers have gained notable importance because of the inefficiency of the chemical and physical disposal methods used for the pollutants, as they causes many environmental hitches[(7)] . Several reports states that microorganisms like *bacteria, fungi and actinomyces* able to degrade polyethylene and utilize them as a sole source of carbon [(1)]. There are few fungal species *A.niger, A.oryzae, A.japonicus, Penicillium sp.,etc* associated with degrading materials, but *A.oryzae* was found to be more dominant among all the fungal isolates in degrading low density polyethylene[(8)](Indumathi etal, 2016).The microbial isolates that degrade polyethylene bags were isolated and identified by Monica in 2015[(9)], she isolated *bacterial,*

fungal and actinomycetes species, among all the isolated strains *Bacillus cereus, Phoma sp and Streptomyces rochei* are more prominent in degrading polyethylene.

Biodegradation of low density polyethylene became challenging to overcome the pollution and protect our ecosystem from deleterious effects .This aims me to investigate and isolate a potent strain *Streptomyces werraensis* SDJM from garbage soil and check the degradation ability of the organism through various analytical techniques.

MATERIAL AND METHOD

Materials

2.1.1 Low density polyethylene film from Pack worth polymers, India with a density of 0.9140-0.9200 g/ml is selected for degradation studies.

2.1.2 Mineral salt medium (MSM) was prepared as per the composition to provide nutrients for the organism (grams per litre) KH_2PO_4, 0.7; K_2HPO_4, 0.7; $MgSO_4.7H_2O$, 0.7; NH_4NO_3, 1.0; NaCl, 0.005; $MnSO_4.7H_2O$, 0.001; $ZnSO_4.7H_2O$, 0.002; and $FeSO_4$, 0.002.

2.1.3 Low density polyethylene powder (LDPE) with 53-75µm particle size was obtained from Sigma Aldrich Chemical Co (Product of USA) with density 0.94g/ml at 250C.

Sample collection, Isolation and Screening

Garbage soil samples were collected from different garbage dumped sites. Isolation and screening was performed for all the isolated strains and found that *Streptomyces species* is more efficient in degrading low density polyethylene [10].

Identification of *Streptomyces sps* through 16srRNA sequencing

For molecular characterization the *actinomycete* culture was sent to Yaazh xenomics Pvt Ltd, Chennai. Genomic DNA was isolated using Insta Gene TM Matrix Genomic DNA isolation. 8F (AGAGTTTGATCCTGGCTCAG) & 1541R (AAGGAGGTGATCCAGCCGCA) universal primers were used to identify 16rRNA and sequencing reactions were performed by ABI PRISM® Big Dye TM Terminator Cycle Sequencing Kits. Further the 16sRNA sequence data was aligned and subjected to blast analysis by NCBI blast similarity search tool. The program MUSCLE 3.7 was used for multiple alignments of sequences[11]. The resulting aligned sequences were cured using the program Gblocks 0.91b.This Gblocks eliminates poorly aligned positions and divergent regions (removes alignment noise) [12].Finally, the program PhyML 3.0 aLRT was used for phylogeny analysis and HKY85 as Substitution model. The identified 16srRNA sequence is submitted in gen bank.

Enrichment of *Streptomyces werraensis* SDJM

Before degradation low density polyethylene powder was added to Mineral Salt medium at a concentration of 0.1% (w/v) and sonicated for 1hr at 120rpm. After sonication the medium was autoclaved at 120^0 C, 15lbs pressure for 15 min. MSM medium is cooled and inoculated with *Streptomyces werraensis* SDJM isolate. The inoculated sample is incubated at 30^0-35^0C for 7-10days.

Analytical techniques to identify biodegradation of LDPE by *Streptomyces werraensis* SDJM

Disinfected LDPE strips were cut into 10x10cm and added into sterile 100ml of MSM containing flasks. Then enriched *Streptomyces werraensis* SDJM culture is added into the conical flasks with a volume of 10ml. The flasks were left in orbital shaker at 30^0-35^0C, at 120rpm for one month. After one month of incubation the films were disinfected with ethanol, air dried and analytical techniques like differential scanning, X-ray diffraction, FTIR and GSM were performed to identify the structural and chemical changes of the LDPE. Control was maintained without organism to check the efficiency of degradation by *Streptomyces werraensis* SDJM.

Differential scanning colorimeter (DSC)

DSC is a method used to measure glass transition, melting temperature and crystallization temperature while a polymeric material is heated or cooled. 0.5mg of sample is weighed in aluminum pans and equilibrated at 30 ^{0}C in DSC instrument DSC Q20 V24.3 with Ramp 5^0C/min and temperature 200^0C[13].

Gram per square meter (GSM)

Gram per square meter (g/m²) is a metric measurement unit of surface or a real density. The unit is often used to measure density or thickness of a paper/LDPE. The density expressed in g/m² is called *grammage.* The

LDPE sample to be analyzed is placed on the equipment (GSM Round Cutter (PRESTO MAKE)) with a safety lock and a handle applying slight pressure, so that the samples were cut by rotating the handle under pressure. Samples collected by releasing the handle and weighed them accordingly to calculate the GSM.

Fourier transform infrared spectroscopy analysis (FTIR)

The structural changes and in the LDPE surface was investigated using FT-IR spectrometer. For each LDPE film, a spectrum was taken from 400 to 4000 wavenumbers cm^{-1}. The carbonyl and double bond indices were calculated based on the relative intensities of the carbonyl band at different wave numbers specifically at 1,715 cm^{-1} and the double bond band at 1,650 cm^{-1} to that of the methylene scissoring band at 1,460 cm^{-1}[14].

X-ray diffraction analysis(XRD)

The X-ray diffraction patterns of the films were measured with a X-ray diffractometer (D5000, Siemens Diffractometer) which is operated fully automatically using Cu Kα radiation (λ=1.5418 A°). The scattered radiation was registered in the angular interval (2□) from 2°to 40°. A current of 30 mA and a voltage of 40 kV were used. All diffraction patterns were examined at room temperature and under constant operating conditions [5].

RESULTS & DISCUSSION

Molecular characterization

The 16S rRNA gene sequence data of the strain SDJM was compared with the Genbank nucleotide data bases. The strain was phylogenetically placed in the genus Streptomyces (Fig- 1) and the gene sequence was deposited in Genbank under the accession number MF186882.

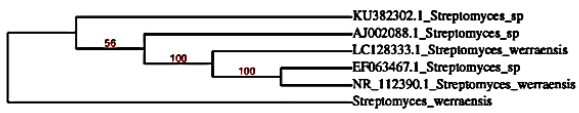

Fig: 1 Phlogentic tree for *Streptomyces werraensis* SDJM

Differential scanning colorimeter (DSC)

Differential scanning calorimetry (DSC) is a technique in which the difference in energy inputs into a substance and a reference material is measured as a function of temperature whilst the substance and the reference material are subjected to controlled temperature program [15]. The melting temperature(T_m) of control is 116.12^{0}C and the melting temperature of inoculated LDPE sample after one month is 112.38^{0}C. The melting temperature is decreased to 3.74^{0}C in one month of incubation (Fig:2). DSC results clearly indicate that *Streptomyces werraensis* SDJM degrades LDPE as the melting temperature is reduced compared to control.

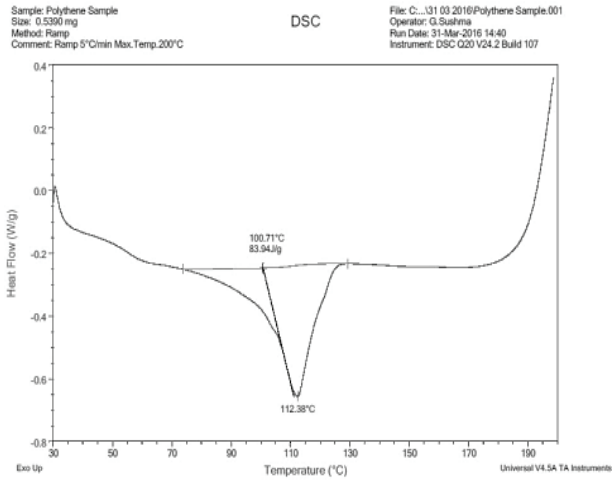

Fig: 2 Differential scanning colorimetry

Control

Sample

The changes in the thermal properties of the treated (consortia) LDPE film were analyzed by Harshita etal[16] through determination of bulk structural characteristics with reference to untreated LDPE film as control.The T_m of untreated is 113.06^{0}C and treated with consortium is 112.10^{0}C where T_m 0.26^{0}C is reduced in the sample after three months whereas *Streptomyces werraensis* SDJM in present study the T_m is reduced to 3.74^{0}C

Gram per square meter (GSM)

The LDPE strips kept for incubation is10cmx10cm to study the activity. In present study biofilm formation by *Streptomyces werraensis* SDJM was observed in one week where as biofilm formation in case of *Pseudomonas*[17] was initiated from the 40th day of incubation..The LDPE samples from the inoculated MSM medium after one month is disinfected, air dried and weighed the sample and GSM is calculated as per

the below formula.

$$\frac{\text{Wt. of the cut piece in gms}}{\text{Dimension in cm (Length x breadth)}} \times 10000 = \_\_\_\_\_ \text{GSM}$$

The GSM of the inoculated sample is 43.5 where as the GSM of control is 60.6. The GSM of the sample is reduced to 28.22% which indicates the degradation of LDPE by *Streptomyces werraensis* SDJM is more prominent in one month.

Fourier transform infrared spectroscopy analysis (FTIR)

FTIR is known as finger print region as each peak indicates its functional group.The *Streptomyces werraensis* SDJM, *t.*reated samples were cleaned, airdried and FTIR analysis was performed with a wavelength ranging from 400 to 4000 cm^{-1}. There is decrease in the intensity as IR rays pass through the *Streptomyces werraensis* SDJM. Inoculated sample due to vibrational changes with C-H stretch, bending, rocking and there is shift in absorbance between 1000-1750cm^{-1}(Fig:3).

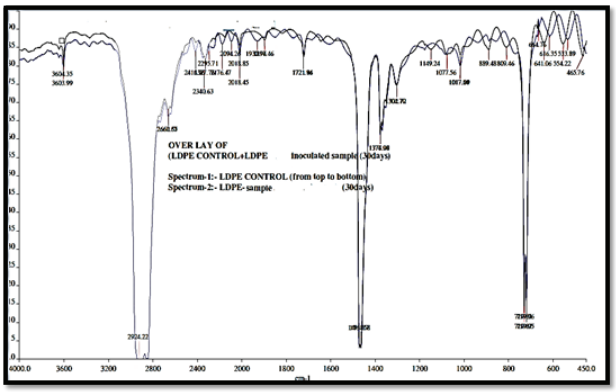

Fig:3 Over lay of FTIR spectra of control and *Streptomyces werraensis* SDJM

In the biodegradation of polyethylene, the initial abiotic step involves the oxidation of the polymer chain leading to the formation of carbonyl groups. These groups eventually form carboxylic groups, which subsequently undergo β-oxidation[13] (Albertsson , 1987) and are completely degraded via the citric acid cycle resulting in the formation of CO_2 and H_2O. The strong absorption peaks at 719 and 1,472 cm^{-1} became weaker after microbial treatment. In addition, the intensity of those peaks reduced more in case of BSM-2 than BSM-1 whereas peaks at 2,919 and 2,850 cm^{-1} became sharper in the treated sample than the control one, here also the same microbial activity pattern was seen. The change in the peak values of almost all functional groups supporting the conformational change on polymer surface[18] . The intensity of the bands in the 1,000–1,700 cm^{-1} range (1,071, 1,541 and 1,649 cm^{-1}) is also attributed to the oxidized fractions because of the action of the selected microorganisms (*Lysinibacillus xylanilyticus* and *Aspergillus niger)*.) after 126 days of incubation as said by Atefeh Esmaeili etal[5] whereas the change in the intensity of bands 1000–1,700 cm^{-1} range of LDPE by *Streptomyces werraensis* SDJM is only 30 days.

X-ray diffraction analysis

The XRD spectra of control and sample were analyzed after one month of incubation. XRD spectra of polyethylene show three peaks at 21.4, 23.5 and 26.8 of the angular position 2Θ. The intensity of the sample is reduced to half the intensity of control. This difference clearly indicates that *Streptomyces werraensis* SDJM plays a vital role in degrading LDPE (Fig: 4).

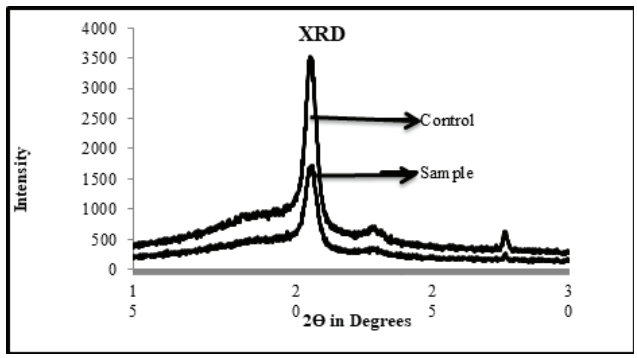

Fig:4 XRD analysis of contrl and *Streptomyces werraensis* SDJM

The XRD spectra of the non-UV- and UV-irradiated pure LDPE films before and after 126 days of incubation in soil in the presence and absence of the selected microorganisms. The intensity of the peaks was significantly decreased after 126 days of incubation in soil in the presence of *Lysinibacillus xylanilyticus* and *Aspergillus niger* [5]. The intensity of the peaks was significantly decreased after 60 days of incubation in the presence of the selected bacterium, *A.denitrificans* strain S1[19] . Compared to above study *Streptomyces werraensis* SDJM decreased the intensity of peaks in 30days.

CONCLUSION

This concludes that the strain *Streptomyces werraensis* SDJM. Isolated from garbage is highly potent

in degrading LDPE compared to other microorganism in short period of time. Thus, non-degradable synthetic polymer, low density polyethylene can be degraded by *Streptomyces werraensis* SDJM and make our atmosphere eco-friendly to our future generations.

Ethical Clearance - Taken permission from Sripadmavathi Mahila University to conduct the research

Source of Funding- Self

Conflict of Interest – Biodegradation of environmental pollutants

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DOI Numher: 10.5958/0976-5506.2018.01360.8

Effect of Proprioceptive and Flexibility Exercise Program along with Resisted Training on Anxiety and Depression with Diabetic Neuropathy

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ABSTRACT

Objective: diabetic neuropathy is a common complication of diabetes. Though the beneficial effect of exercise on diabetes is well established, specifically relationship between effect of exercises over the anxiety and depression in diabetic neuropathy has not been explored. Hence, the objective of this study was to examine the effect of exercises on anxiety and depression in people with Diabetic neuropathy..

Method: Sixty Four sedentary individuals (mean age 57 ± 5.11 years) with diabetic neuropathy were enrolled in a 8-week, supervised exercise program. Group A received proprioceptive exercise and group B underwent flexibility exercises along with a resisted exercise program for both the group. anxiety and depression were measured pre-intervention and post-intervention (4weeks & 8weeks) as outcomes of interest.

Results: Significant reductions in anxiety and depression in both groups.

Conclusion: The results from our current study suggest that proprioceptive exercisese with flexibility exercises combined with resisted exercise both are equality effective in reducing the anxiety and depression among the diabetic neuropathy patients.

Keywords*: Diabetic neuropathy, Proprioceptive exercises, Flexibility exercises, Resisted exercises, Hospital anxiety and depression scale.*

INTRODUCTION

This study was undertaken as part of doctoral work on the effect of exercises in diabetic peripheral neuropathy (DPN) patients. Increasing evidences are emerging from screening studies done on diabetes in both developed and developing countries that the number of persons suffering from diabetes has been increasing at an alarming rate worldwide. From the etiological studies it is understood that this increase in epidemic is attributed to life style changes, poor glycaemic control due to changes in food habits, increasing level of mental stress among various other factors[1]. Diabetic neuropathy is a one of the serious complication of long term diabetes, which is associated with considerable morbidity, mortality and diminished quality of life and it affects around 50% of the people with diabetes[2]. Persons affected by Type II diabetes have mild to severe forms of nervous system damage, which also include impaired sensation, pain in the feet or hands and stress related syndrome. In an observational study among Indian population, DPN is reported to be the major complication of Diabetes and poor glycaemic control seems to be the major cause for the complications in diabetes[3]. In total, the risk factors which determines the severity of diabetic peripheral neuropathy are those of poor glycaemic control, Duration of diabetes, Damage to blood vessels, Mechanical injury to nerves, Autoimmune factors, Genetic susceptibility, Lifestyle factors such as Physical exercises, Smoking, Diet. In addition DPN increases the risk of adverse effects in Indian population due to poor foot hygiene, improper foot wear and frequent

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bare foot walking[4]. Apart from pharmacological management for DPN, the limited number of studies support exercise as one of the important modality of treatment in controlling diabetes and its complications including the DPN[5-7]. The coordination and integration of sympathetic nervous system is extremely important in the maintenance of blood glucose at rest and exercise. Strong evidences support that intensity and duration of exercises are very important in determining the fuel usage during exercises[8]. In an analysis suggest that the effect of duloxetine and pregabalin for initial 8-week treatment in diabetic neuropathy was examined based on demographics and disease characteristics at baseline except for the presence of mood symptoms. Duloxetine treatment appeared to be particularly beneficial in diabetic neuropathy patient[9]. The diabetic neuroapthy patients diagnosed with gastroparesis had glycemic control improved ($p = 0.04$) and GI symptoms less ($p = 0.001$), after a follow-up time of 3.2 years (mean). Both groups reported severely impaired quality of life (QoL). In total 47% reported symptoms of anxiety, 38% symptoms of depression (scores ≥ 8). The patients diagnosed with diabetic gastroparesis suffer from severely impaired QoL and a high burden of anxiety and depressive symptoms[10].

METHOD

Subjects

Sixty Four sedentary individuals (mean age 57 ± 5.11 years) with a confirmed diagnosis of painful DPN were enrolled in an 8-week, supervised exercise program. Group A received proprioceptive exercise and group B flexibility exercise and a resisted exercise program for both the groups. Anxiety and depression were measured pre-intervention and post-intervention (4 weeks & 8 weeks) as outcomes of interest.

Measurements

For Measurement of and anxiety and depression the Hospitl anxiety and depression scale was used.

Procedure

Both the groups completed a 8-week of exercise training program. The physical exercise comprised of**:**

Group A - 1 minute warm up exercises Proprioceptive Exercises(15 Minutes)Rest(3 Minutes) Resisted Exercises (15 Minutes), 1 minute cool down exercises, 35 minutes daily for 4 days/ week for 8 week.

Group B - 1 minute warm up exercises,Flexibility Exercises(15min),Rest

(3 min)Resisted Exercises(15 min) 1 minute cool down exercises, 35 minutes daily for 4 days/ week for 8 weeks.

Flexibility exercises: General flexibility exercise involving all major muscle groups for 15 minutes duration.(Upper limb, Lower limb, Trunk) 2 to 4 repetitions. static stretching holding15 seconds [11].

Resisted exercises involving major muscle group for 10 repetitions, 2 sets, mild intensity[12]

Proprioceptive exercises (15 min) 3 repetitions with eye opening and closed, exercises are Without holding anything raising from the chair, Place some objects in the ground as obstacles and try to cross object by stepping,Head rotation, forward stepping, sideways stepping, tandem walking, single leg standing, stand on one leg with pillow[13].

The training program was performed at not beyond 70% of the individual age-predicted maximal heart rate (HRmax). The exercise sessions were supervised and exercise was monitored and registered.

Statistical Analysis

All statistical analyses were performed using the SPSS™ version 20.0. Prior to final analysis, data were screened for transcription errors, normality assumptions, homogeneity of variance, as prerequisites for parametric calculations of the analysis of difference and analysis of related measures. Alpha level was set at 0.05 to control for type I error and confidence interval was set at 95% for all statistical analysis. Descriptive statistics and repeated measures multivariate ANOVA was used for within and between-group comparisons at each follow-up period.

RESULTS

Descriptive Statistics of the Main Study

Table - I. Represents descriptive statistics of age, weight, heigh, duration of pain symptoms of 64 subjects in both the groups. Baseline comparison between the groups have been done using independent samples 't' test.

Characteristics	**Group A [N=32] Mean ± SD**	**Group B [N=32] Mean ±SD**	**P-value**
Age (years)	56.18±4.04	56.77±3.52	0.311
Height (cm)	161.18±4.93	160.89±5.05	0.718
Weight (kg)	65.45±7.12	65.32±8.43	0.704
Duration of the condition (months)	41.76±27.83	41.52±28.61	0.673

Table: II. Baseline Comparisons in Both Groups

Outcome measures	**Group A [N=32] Mean ± SD**	**GroupB [N=32] Mean ± SD**	**t – value**	**P – value**
HADS BASELINE	20.10 ±6.428	20.11 ±5.102	0.518	0.544

Table: III. Means and SD of Variables at end of 4th week and follow up period in both the groups.

Follow Up At	**Outcome Measure**	**Group A Mean ± SD**	**Group B Mean ± SD**
Week 4	HADS	17.24± 6.330	17.17 ±6.658
Week 8	HADS	15.23± 6.28	14.20± 6.12

Repeated measure multivariate ANOVA for within-group comparison

Table: IV. Within-Group Comparison Results with Interaction (N=32)

Outcome Measure	**F**	**P-value**	**Effect Size** (Partial Eta Squared)
HADS	139.63	0.000	0.504

Table: V.Between-group comparison of various outcomes for group A&B

The Between Group Comparison of Result of Group A and Group B (N=32)

Outcome Measure	F	P-value	**Effect Size** (Partial Eta Squared)
HADS	0.135	0.701	0.001

HADS

The within-group repeated measure multivariate ANOVA with Greenhouse-Geisser correction (GGC) showed the significant statistical difference with F= 139.63, p<0.000. A repeated measure multivariate ANOVA with (GGC) between-group analysis showed that the Group A and group B were not different statistically with F = 0.135, p<0.701.

DISCUSSION

Our main aim in this study was to find the levels

of anxiety and depression associated with diabetic peripheral neuropathy following combinations of exercises. With respect to anxiety and depression, both the groups showed significant reductions in anxiety and depression level in diabetic neuropathy patients. The better improvement in both group A and B. However it needs further understanding through objective quantification on the effect of proprioceptive exercises compared to flexibility exercises on whether a significant change can be produced. Further study is also needed to throw light on the effect of other outcome measure like quality of life. In a analysis of title which hypothesized that diabetes-related distress would vary by type of diabetes and medication regimen [Type 1 diabetes (T1DM), Type 2 diabetes with insulin use (T2DM-i) Type 2 diabetes without insulin use (T2DM)], the stress is higher for those with type 2 diabetus[14]. In a study the severity of diabetic peripheral neuropathy and depressive symptoms are assessed with the Hospital Anxiety and Depression Scale (HADS). The association between diabetic neuropathy symptoms and HADS was partially influenced by psychosocial variables such as perception , treatment lack of control, activities in daily life restriction and social self perception changes. Some findings showed the relationship between diabetic neuropathy and depressive symptoms and identified the fators to reduce the depressive symptoms in with diabetic peripheral neuropathy[15]. A study evaluated the effect of foot problems on mental health in diabetic patients. The diabetic patients (47 patients with and 49 patients without foot problems) and completed outcome surveys in which the greater depression symptoms (Hospital Anxiety and Depression Scale [HADS], the foot problems are significantly associated with mental health symptoms in diabetic patients. In our study, both the groups are matched in terms of baseline parameters of age, weight,height and duration of the condition. Baseline outcome measures also indicated matched pairs of subjects from both group A and B suggesting better inference from the statistical results. The examination of depressive symptoms increase the risk of diabetes and a diabetic foot ulcer, the symptoms of depression at baseline are associated with an increased risk of a diabetic foot ulcer[16]. The objective of this study was to examine the effect of exercises on anxiety and depression in people with Diabetic neuropathy.

In this study, from table III, it can be seen that, with the addition of flexibility or proprioceptive exercises to resistance exercises, there is a significant reductions in anxiety and depression levels in both the group of patients intermittently at 4 weeks and at 8 weeks.

CONCLUSION

The results from our current study suggest that proprioceptive exercisese with flexibility exercises combined with resisted exercise both are equality effective in reducing the anxiety and depression among the diabetic neuropathy patients.

Funding: The authors carried out the work self financed.

Conflict of Interst: No conflict of interest as authors concerned.

Ethical Considerations: The study was initiated after getting the approval from the Institutional Human Ethics Committee of Saveetha University. The whole procedure of the study was very well explained to the participants by providing them with information sheet. Their doubts were cleared and the informed consent was obtained. Translation of the information sheet and the informed consent to the local language was done. Confidentiality of the data was ensured.

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DOI Numher: 10.5958/0976-5506.2018.01322.0

Feasibility Study and Project Conceptualization of an upcoming Hospital in Navi Mumbai

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ABSTRACT

Today in India 80% of hospitals are owned by private sector whereas remaining 20% by Government sector. Doctors per 1000 population (0.7 per 1000) as well as Hospitals beds per 1000 population (0.9 per 1000) is less than that of WHO recommendation (3.3per 1000).[1] The study sought to analyse whether the existing market of healthcare sector is feasible for setting up the proposed hospital in Ghansoli, Navi Mumbai & to assess its business potential. At present, there is a Bed deficit of around 450 in Navi Mumbai and 557 beds in Ghansoli.[2] The study aims to understand the existing healthcare facilities in the proposed area, to identify the lacunae and to analyze the need-gap for the proposed healthcare facility. Also, it suggests the best possible Healthcare Service Model.

A market survey and key competitor profiling were carried out. Using Simple Random Sampling method, 25 Hospitals/private clinics and 8 Diagnostic centres were selected and visited. Primary data was collected by conducting interviews with the consultant/administrators. Secondary data was obtained from journals, official reports, government websites and news articles. Data analysis was carried out to prescribe the facility mix for the proposed hospital.

The key findings of the survey indicated that majority population belongs to middle income group and is mostly un-insured. The study showed that, Ghansoli required super specialty services. Very few surgeries and ICU admissions have been observed. Also, it is observed that the CT and MRI services are not available in Ghansoli. Due to lack of basic healthcare facilities available in Ghansoli, majority of patients are compelled to seek healthcare services in other cities.

The most feasible plan is to establish 200 bed multispecialty tertiary care hospital with superior diagnostic and imaging facilities. Thrust areas should be Critical Care, Interventional Cardiology, Orthopedics, Neurology and Neurosurgery, Gastroenterology, Nephrology and Urology. As per industry requirement and benchmark, 20 % beds should be reserved for critical care. As per the Consultant survey and the bed mix observed in the hospitals during the survey, general wards and twin sharing should be 69% of the bed-mix, followed by remaining 11% of single occupancy. The proposed hospital should be a one-stop healthcare solution for the citizens at a competitive price.

This healthcare market study of Ghansoli area is a novel study, and would be useful in the development of healthcare infrastructure in this area.

***Keywords**: Feasible, Need-gap, Proposed hospital, Tertiary healthcare.*

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INTRODUCTION

Rising competition in the healthcare industry and escalation of land cost has forced hospital operators to improve their infrastructure in order to stay viable

and competitive in the market. High cost of real estate and non-availability of large spaces in metros, further drive the need to have an efficiently planned hospital as an answer to the ever increasing need for healthcare services. The hospitals of tomorrow will face the same dilemma and will have to cater to the demand of high quality care at competitive cost, delivering excellent customer service and dealing with high pricing at the same time.

The need of the hour is to develop a planning tool for hospitals that does not compromise on functionality, patient safety & experience and maximizes the efficient utilization of limited space. One is forced to think about how they can develop a smarter design process that addresses the initial capital constraint issue, delivers more efficient hospitals, reduces long-term operation costs and creates right sized convenient hospitals that consumers demand.

At the same, one cannot ignore the overall operational model of care, work-flow analysis, patient throughput, staff efficiency, staff and patient safety concepts and many other variables in the healthcare delivery equation. There has been a relationship between medicine and architecture since ancient times. Care of the ill has taken place in a variety of settings which have been recognized as a positive factor in the healing process

It is a challenge to the healthcare players to provide maximum care within the space or less space available by taking charge of the space, maximizing utilization and marketing the efficiency. Space efficiency leads to economization and is directly related to capital cost. As the inpatient beds account for almost 70% to 80% of the revenue beds in a tertiary care private hospital, it is important to functionalize the size of inpatient rooms and focus on patient and family needs. Scope for expansion is an important factor for the growth and so is adaptation to changing technology.

Government agencies involved in the granting of permission to build hospitals in India, be it planning agencies or accreditation agencies, are silent on the aspect of space planning, operational & economic efficiency

AIM

Feasibility Study and Project Conceptualization of an upcoming hospital in Navi Mumbai

OBJECTIVES

To study the existing healthcare facilities in the selected area.

To carry out the detail analysis of proper siting, market analysis, demographic analysis & likely economic feasibility of return on investment and competitor analysis,

Suggest recommendation for the new project about requirement specialities and support services

METHODOLOGY

The study was conducted over a period of 1.5 months. The market survey was carried out in the population of Ghansoli, Airoli, Rabale, Koparkhairne, Nerul and Vashi from which sample was drawn. Competitor Profiling was done in 7 direct and indirect competitor hospitals.

Procedure Adopted:

Using Simple Random Sampling method, 25 Hospitals/private clinics and 8 Diagnostic centres were selected and visited.

a) Primary data collection: To collect information, direct personal meetings were conducted with consultants/ hospital administrators. Structured interview method was adopted to carry out the market research using a questionnaire. Consultants of different specialties& private practitioners as well as hospital administrators were interviewed.

b) Secondary Data Collection: It was collected from company records, office database, journals, government websites and news articles.

Major Sources: Reports published by Directorate of Census, Government of India, by Navi Mumbai Municipal Corporation (NMMC) and by City and Industrial Development Corporation (CIDCO).

Data analysis of both primary and secondary data was used to generate perspectives on the healthcare dynamics of Navi Mumbai region and the immediate service area. These perspectives were used to forecast healthcare demand and thus prescribe the facility mix for the proposed hospital.

Limitation of the study is that it does not include the financial feasibility.

FINDINGS

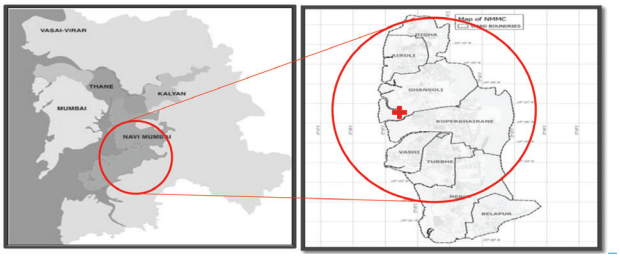

Fig 1: Site Map of the Hospital Project

As per Global norms, we notice a bed deficit of 450 in Navi Mumbai Region and 557 beds in Ghansoli. [2]

According to the Environment Status Report, NMMC 2014-15, the annual growth rate of population in Navi Mumbai is 5.3%whereas; Ghansoli's Population has grown from 51.632 in 2001 to 88,749 in 2011 depicting an annual growth rate of 6.2%. So, the estimated population in 2016 is 1, 16, 276.[3]

The growth in the number of nursing homes from 2011-2015 has been at 26.56% while hospitals have grown by only 4.44%.[4]

Despite the fact that, there is a reliable supply of electricity, water and excellent connectivity of Navi Mumbai with surrounding regions as well as within the Nodes of Navi Mumbai (Divisions of Navi Mumbai as per CIDCO), the patients from primary catchment area have to travel for about 30 – 60 minutes to secondary regions to avail quality healthcare services.

The median household income across Airoli and Ghansoli lead to moderate spending power. However, due to the presence of large number of industries and companies being set up in these areas creating high employment opportunities, the proposed hospital can attract corporate customers seeking quality health care services. [5]

Market Survey Findings and Analysis of the data:

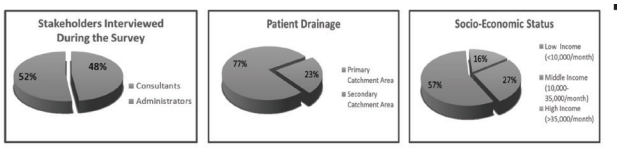

Fig 2 Market Survey Findings:

The 25 consultants / hospital administrators interviewed, gave the following responses 52% of the respondents were Hospital Administrators and 48% were Consultants[6]

Majority patients (i.e. 77%) visiting most of the hospitals and private practitioners were from primary catchment area such as Ghansoli, Talavli, Rabale, Mahape, Koperkhairane, Airoli, Digha, Vashi.

57% of the population availing healthcare facilities belong to the middle income group and 27% belong to the low income group while only 16% are High income earners.[7]

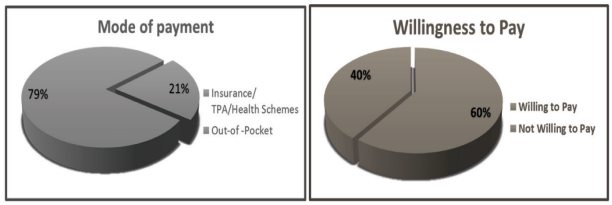

Fig 3 : Economic Profile of Clientele

The preferred mode of payment for majority of the population (i.e. 79%) continues to be out-of-pocket expenditure and the remaining 21% make payments through TPAs and insurance schemes (both private & govt.)

High percentage of willingness to pay suggests that the people are ready to spend on good quality healthcare if they get value for money.[8]

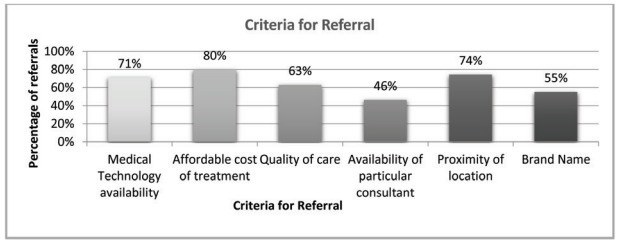

Fig 4: Availability of other Medical Resources in the Neighbourhood

Affordable treatment is the most important factor (80%) that influences selection criterion for referring patients to higher setups, given the socio-economic status of the population.Proximity of location and availability of Medical Technology in hospital were perceived as equally important at 74% and 71%.

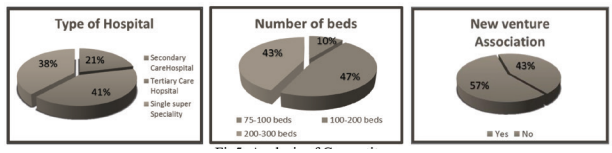

Fig 5: Analysis of Competitors

41% of the respondents opined that 'all-under-one-roof' setups i.e. tertiary care hospital with advanced

medical technology, infrastructure and experienced super specialty doctors will attract patients from within and outside Ghansoli.

47% of the stakeholders interviewed opined that starting a 100-200 beds hospital would be a feasible option.

57% of the consultants interviewed expressed their interest to get associated with a new setup which indicates that doctor engagement may not be a challenge for a new player.

The common reasons for availing healthcare services is a mix of communicable (gastroenteritis, dengue, malaria) and non-communicable diseases (Hypertension, diabetes, renal stones).

70% and above consultants surveyed opined that Ghansoli required super specialty services across all major medical and surgical specialties. Consultants from various specialties were interviewed to assess the work load referred out of Ghansoli. Majority of the cases referred were for specialized Spine and Neuro surgeries, Cardiac Surgeries, Oncology, Pediatrics, Urology, Nephrology and Gastroenterology.

Pathology and Radiology services are not upto the mark. It has been observed that the CT and MRI services are not available in Ghansoli. Patients have to travel to Vashi to avail these diagnostic services.

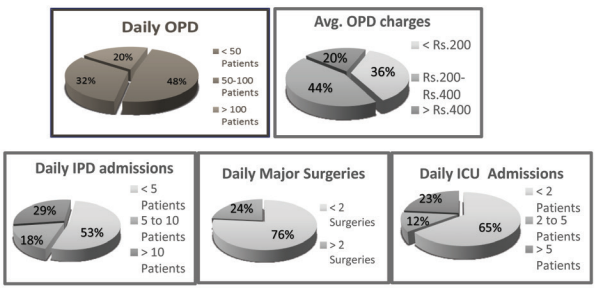

Fig 6: Hospital Work load Analysis

The patient statistics data obtained showed that-

In 48% of the surveyed hospitals/private clinics the daily OPD count was less than 50 and in 32% it was between 50-100 patients. About 20% of the surveyed hospitals/private clinics had a footfall of more than 100 patients in their Out-patient Department. The average OPD fees ranged between Rs.200-400 in majority of the surveyed facilities.

The daily IPD admissions were less than 5 in 53%, more than 10 in 29% and between 5-10 cases in 18% of the surveyed hospitals/private clinics.

The no. of surgeries performed and daily ICU admissions were found to be very less in the surveyed hospitals/private clinics which was indicative of the fact that, Ghansoli lacks quality critical care and super-specialty services due to which the patients are compelled to seek the said services outside Ghansoli.

7 Key competitors were surveyed for their service mix, bed mix, productivity and tariff to gauge the existing and popular healthcare facilities and accordingly position the proposed hospital in the 'pricing-level of care' matrix.

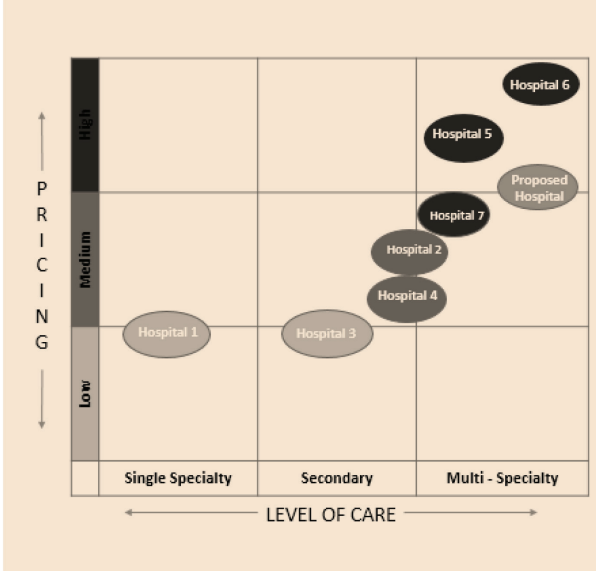

Fig 7 : Need Analysis for Level of Care

The direct competitors (Hospital 1,2,3,4) of the proposed setup are currently offering secondary level care with very few hospitals offering multi-specialty services. However the medical technology is not at par with the industry standards. The pricing of their services is in low-medium range.

The indirect competitors (Hospital 5,6,7) are offering multi-specialty services with some offering state-of-the art facilities. However, apart from Hospital 7, the pricing of services is high.

The positioning of the proposed hospital should be a tertiary care setup with multi-specialty services and quality diagnostic & imaging services made available under-one-roof. The proposed hospital should offer services at competitive prices.

RECOMMENDATIONS

In view of the growing population and dire need for tertiary healthcare facility in Ghansoli, a tertiary care hospital setup with a bed capacity of 200 beds is recommended.

Our proposed hospital being located just besides the highway, the incidence of road traffic accident cases would be high. Therefore, for efficient utilization of the golden hour by providing prompt medical treatment, it is imperative that the hospital has the provision for all the required diagnostic and imaging facilities.

The patient footfall may be increased by attracting patients mainly from primary catchment area by providing quality healthcare services under single roof.

Thrust Areas: Critical Care, Interventional Cardiology, Orthopaedics (Joint Replacement surgeries), Neurology and Neurosurgery, Medical and surgical Oncology, Gastroenterology, Nephrology and Urology.

General Medicine and surgery, Gynaecology, Paediatrics, Ophthalmology, ENT, Dental and Physiotherapy are the specialities which are essential in the primary catchment area and hence should be included.

RECOMMENDED BED MIX

20% of the hospital beds should be reserved for critical care. Thus, there must be 40 Critical care beds in total (ICCU, MICU, SICU and NICU).

Total In-patient beds should be 160. 36% of hospital beds must be for general ward (4 beds in 1 room) and 33% for twin sharing rooms (2 beds in 1 room) i.e. 72 and 66 beds respectively. 11% of hospital beds should be for single occupancy i.e. 22 beds.

Thus, the total revenue beds should be 200.[9-10]

50 service beds must be present for Ambulatory care, Pre-Operative and Post-operative beds, Cath lab and dialysis beds, Endoscopy beds and Emergency beds.

Recommended Facility and Service Mix:

30 OPD Consultation rooms are recommended.

2 Dental Chairs must be present in the facility.

There should be 6 Major Operation Theatres and 1 Minor Operation Theatre.

Central Sterile Supply Department, Blood Storage, Pharmacy and Medical Records Department must be present within the facility.

The proposed hospital must house complete Laboratory Services including Haematology, Microbiology, Biochemistry, Clinical Pathology, Histopathology and Serology.

The Diagnostic services must include Endoscopy, Laparoscopy, Ultrasonography, Mammography, Radiology and Imaging services like X-ray, OPG, CT scan, PET scan, MRI, Bone densitometer. There should be Non- invasive Cardiology services including ECG, TMT, and Echocardiography. EEG, EMG, PFT services must also be present.

Cath Lab and Dialysis services are recommended within the proposed hospital.

The proposed setup will house all the major services including Oncology. However keeping in mind the high capital expenditure, an out-sourced Radiation Oncology department is recommended.

CONCLUSION

The changing demographics, improvement in health awareness, rise in income due to industrial hub, a change in the lifestyle disease profile, rising penetration of health insurance will increase the demand for full fledged healthcare facilities.

The need for setting up integrated tertiary healthcare facilities in developing areas to cater to the growing commercial and residential core is increasing and the health care demand supply gap needs to be reduced.

The most feasible plan for proposed hospital is to establish 200 bed multispecialty tertiary care hospital, well equipped with required and latest medical technology.

The proposed location for the facility will experience good growth in terms of infrastructural and commercial development, upcoming employment and good connectivity in the days to come. This, coupled with strong clinical expertise and superior technology will help the hospital to flourish.

There is no **Conflict of Interest.**

The study is not funded by any agency.

The article is an outcome of PhD Research Process

There were no interventions on human/ animals, hence no Ethical Committee clearance was required.

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DOI Numher: 10.5958/0976-5506.2018.01323.2

The Application of Irene's Donuts Innovative School Program Towards the Oral Health Care and the Hygiene Index of Children with Special Needs

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ABSTRACT

Background: Children with special needs should get a special care of the teeth and mouth health from both the teachers at school and the parents at home. Most students at the public elementary school for exceptional children in Semarang, Indonesia (77%) suffered from dental caries requiring a particular attention. Irene's Donuts Oral Health School Innovative Program is a method that has been proven in reducing the risk of caries in the elementary school, so it needs to be tested then applicability to students in elementary school for exceptional children.

Method: The type of this research is a quasi-experimental study with a non-randomized pretest-posttest control group design. This study was conducted on76 respondents with 38 respondents in the control group and 38 respondents in the experimental group.

Results: The pre and post-test result of dependent t-test against the Oral Hygiene Index (OHI-S) shows that the p-value is 0.000. The results of Mann-Whitney test on the behavior of dental and oral health care in the control group and the treatment group shows 0.024 of a p-value.

Conclusion: The conclusion from this research is that there is a difference between the OHI-S before and after the application of innovative Irene's Donuts program to the students in elementary school for exceptional children. Moreover, there is a difference between the behavior of the maintenance of the oral health before and after the application of the program.

Keywords *- Exceptional children, Oral Health School Program, Irene's Donuts, OHI-S*

INTRODUCTION

Oral health is necessary to improve public health because the mouth is a significant gateway entry of food into the human body. The effort is focused on promoted, and preventive activities are corresponding to the new paradigm of health policy reform. The main problem of oral health is the prevalence of dental caries (cavities pathogen) so high that almost every patient who came to the dental clinic units have a toothache complaint. Childhood is a time of growth and development where the oral health should be optimal for dental health including for children with special needs whose masticatory function is not optimal and will affect the physical health in general [(1)].

Children with special needs are children who have abnormalities in the context of proper education in the maintenance of dental and mouth health should receive particular attention from teachers in school and parents at home. Most children with special needs in the public elementary school for exceptional children Semarang indicate that (77%) suffered from dental caries, so it needs particular attention [(2)]. This phenomenon suggests that oral health school program in public elementary

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school for exceptional children has not run optimally. Innovative Irene's Donuts is a program developed in Indonesia with innovative methods where parents are involved in it. This program has been proven to reduce the risk of caries in the primary and secondary school but not tested on the students in elementary school for exceptional children [3]. The purpose of this study was to describe Oral Hygiene Index (OHI-S) and the behavior of dental and oral health maintenance children with special needs in the elementary school for exceptional children Semarang before and after application of innovative programs Irene's Donuts.Besides, it also aims at analyzing the differences OHI-S as well as differences in the behavior of the maintenance of oral health in children with special needs elementary school for exceptional children before and after application of innovative programs Irene's Donuts.

The benefits of this research are that it can improve oral hygiene condition children with special needs students and encourage behavior change maintenance of oral health in the right direction. It could also help the implementation of a program of activities which have not yet done so that the desired objectives can be achieved.

METHODOLOGY

The research is a quasi-experimental with a pretest-posttest control group. The population in this study is the children with special needs in elementary school for exceptional children of Semarang as many as 280 children. The sample is children with a special needs mentally disabled category as many as 72 children divided into two groups randomly: experimental and control groups. Data were analyzed by univariate analysis for the behavior. The frequency distribution was used to describe oral health maintenance and OHI-S before and after the application of the program. A dependent t-test was used to determine the differences in the behavior of oral health maintenance and OHI-S in the experimental group and the control group before and after the application of the program.

RESULTS

The results of the frequency distribution of OHI before treatment in control group indicated 11 respondents (28.9%) were in lousy category whereas none of the respondents (0%) was found of this class in the treatment group. Those categorized as medium categories were 27 respondents (71.1%) in the control group while in the treatment group, 37 respondents (97.4%) were found in this type. None of the respondents (0%) fell into a proper category in the control group while in the treatment group was found one respondent (2.6 %).

After treatment, the results of the frequency distribution of OHI in control group indicated four respondents (10.5%) were in lousy category whereas none of the respondents (0%) remained in the treatment group. Those categorized as medium categories increased into 34 respondents (89.5%) in the control group while in the treatment group, 27 respondents (71.1%) were found in this type. None of the respondents (0%) fell into a right category in the control group while in the treatment group increased into 11 respondent (28.9%).

Before treatment, the result of the behavior of the frequency distribution of dental and oral health care in the control group was perceived as less in 11 respondents (28.9%). The medium category was one respondent (2.6%), and the excellent grade was 26 respondents (68.4%). After treatment, the result of the behavior of the frequency distribution of dental and oral health care in the control group was perceived as less decreased into nine respondents (23.7%). The medium category increased to 4 respondent (10.5%) and the excellent division slightly reduced to 25 respondents (65.8%)

Before treatment, the result of the behavior of the frequency distribution of dental and oral health care in the treatment group was perceived as less in 10 respondents (26.3%). The medium category was five respondent (13.2%), and the excellent type was 23 respondents (60.5%). After treatment, the result of the behavior of the frequency distribution of dental and oral health care in the control group was perceived as less decreased into two respondents (5.3%). The medium category declined to 3 respondent (7.9%), and the excellent class increased significantly into 33 respondents (86.8%)

The test results dependent t-test against Oral Hygiene Index (OHI) pre and post-test showed p-value equal to 0.000. Meanwhile, the results of test *Mann-Whitney* on the behavior of dental and oral health care in the control group and the treatment group showed the p-value of 0.024.

DISCUSSION

Oral Hygiene Index (OHI) of children with special needs studying in the elementary school for exceptional children in Semarang before and after application of *Irene's Donuts* innovative program showed that the p-value < 0.05. This figure shows the difference between the difference Oral Hygiene Index in the *pre-post* control group and the treatment group. This difference is influenced by various behavioral factors of oral hygiene, such as brushing teeth after meals and before bed at night, as well as the role of parents is so significant in providing information about the timing and how to clean teeth properly. The level of oral hygiene is closely related to a person's consciousness in oral health, one of which is about how to brush teeth correctly and adequately [4].

The results of different test behavior of dental and oral health maintenance between control and treatment groups showed no difference because the p-value = 0.024 is < 0.05. This indication shows that innovative *Irene's Donuts* needs more instrumental in changing the behavior of the maintenance of oral health in the right direction for children with special needs compared with the usual extension without involving the parents. This because they require special treatment either from parents or teachers. This is by the opinion which says that children with special needs are a child who had a significant abnormality/deviation (physical, mental, intellectual, social, emotional in the process of growth and development compared to the other children of their age, so they require special education services [5].

Frequency distribution results showed that in the control group decreased the percentage of respondents in the category of good dental health maintenance behavior and mouth that is 68.4% to 65.8%. Meanwhile, in the treatment group increased the percentage of respondents in this category from 60.5% to 86.8%. This is caused by children with special needs usually have a lack of understanding or misperception in children with special needs in control group who were given regular counseling without involving parents. One should pay attention that in children with special needs during treatment group, parents must be involved considering the children with special needs stay more at home much longer than in schools. This is by the opinion saying that the nearest home environment: parents, siblings, and caregivers are major shapers of children behavior [6].

The role over the application of innovative *Irene's Donuts* is the availability of suitable and right technique in the maintenance of oral health in the treatment group played by teachers and parents of children with special needs, such as brushing teeth regularly at least 2 times a day in the morning before breakfast and at night before bed. Information provided by teachers and parents also increases the understanding of teachers and parents of children with special needs in the maintenance of oral health, so the guidance and monitoring of the behavior of dental and oral health can be carried out both at school and home. The act of dental and oral health maintenance is indeed expected to reduce the risk of caries as this is consistent with the finding [7] that proves the school program innovative of *Irene's Donuts* applied in an elementary school can reduce dental caries.

CONCLUSION

Oral Hygiene Index for children with special needs in the elementary school for exceptional children of Semarang before the application program innovative school program called Irene's Donuts is still a lot in the category of the medium. However, after the application of the program, the group is improved into good. Similarly, before the implementation of Irene's Donuts program, *less attention is, given to* oral health care but after application of the program, the focus is improved.

Conflict of Interest: The author has no conflict of interests related to the conduct and reporting of this research.

Source of Funding: Source of the fund for this project was by Health Polytechnic Ministry of Health, Semarang, Indonesia.

Ethical Clearance: Before conduct of the study written permission was obtained from Health Polytechnic Ministry of Health, Semarang, Indonesia. Consent and willingness were established from all the subjects who meet inclusion criteria of this study.

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DOI Numher: 10.5958/0976-5506.2018.01324.4

Self Perceived Hand Hygiene among Student Health Professionals in a Tertiary Care Teaching Hospital in Southern India

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ABSTRACT

Implementation of and adherence to practice of hand hygiene in a health care organization not only prevents health care-associated infections (HAI) but also limits the transmission of micro-organisms.With "Clean Care is Safer Care" as a main agenda of the global initiative taken by WHO on patient safety programs,it is time for developing countries to develop the much-needed policies for implementation of practices,which will prevent the basic infection in health care setups.The subjects involved in this study were assessed for knowledge and practice of hand hygiene.Interestingly,this study revealed that awareness & proper practice of hand hygiene was not satisfactory as the mean range of number of correct answers was 15-17 out of 28 questions.This was despite 83.3% of the sample having said that they got formal training in hand hygiene. The comparison of knowledge of the two groups showed that the nursing students were more knowledgeable than the MBBS students.There was a significant difference in the level of knowledge among Nursing and MBBS students as found in similar studies where the knowledge of Nursing students was better than that of MBBS students. Van de Mortel et al. in 2010 studied the hand hygiene knowledge, beliefs, and practices among nursing and medical students.They found that the knowledge of Nursing students was more than that of Medical students ($P < 0.01$), which is consistent with our study.

Keywords: *Hand hygiene, MBBS, Nursing*

INTRODUCTION

Hand hygiene is a general term referring to any action of hand cleaning by using water and detergent and/or the use of alcohol-based hand sanitizers for the removal of transient micro-organisms from hands[1]. Hand-washing with soap and water has been considered a measure of personal hygiene for centuries and has generally been embedded in religious and cultural habits. Nevertheless,the relationship between hand-washing and the spread of disease was established only two centuries ago.The World Health Organization (WHO) has issued guidelines for hand washing procedures in order to decrease the prevalence of hospital associated infections but lack of knowledge amongst healthcare workers is associated with poor compliance[2].

Implementation of and adherence to practice of hand hygiene in a health care organization not only prevents health care-associated infections (HAI) but also limits the transmission of micro-organisms.It is an important practice for all healthcare providers and is recommended in all national and international guidelines for infection control in an organization.It is a basic expectation from a patient and their families.Hand hygiene is one among the five key initiatives addressed by the world alliance for global safety challenges.

The total number of hand exposes in a hospital may vary from several tens to thousands per day.Thus with each hand to surface exposure the transient flora of hand and the micro-organisms present on the object are exchanged.WHO reports an overall estimate of about 1.4 million patients in developed and developing

countries affected by health care-associated infections[3]. In India,hand hygiene is practiced as a custom and is taught at school and community levels to reduce the burden of diseases,but there is minimal information available about the promotion of hand hygiene in health care facilities.[4]Due to poor hand hygiene among health care workers, their hands serve as the most common vehicles for the transmission of healthcare associated infections.Despite the procedure being very simple, compliance with hand hygiene practices among healthcare workers can be as low as 40%[5]. Hand hygiene is regarded as one of the key elements of infection control activities. With the increasing burden of health care associated infections(HCAIs), the increasing severity of illness and the complexity of treatment,exacerbated by Multi-Drug Resistant (MDR) pathogen infections, health care practitioners (HCPs) are stepping back to simple measures like hand hygiene.This is because enough scientific evidence supports the observation that if properly implemented,hand hygiene alone can significantly reduce the risk of cross-transmission of infection in healthcare facilities (HCFs)[6,7,8,9,10].

In this study an assessment was done on the knowledge and practice of hand hygiene among MBBS & Nursing students as they form the largest population among health care workers and are the nucleus of the health care system.

RESEARCH DESIGN

Aim of the study.

To study the Knowledge and Practice of Hand Hygiene among MBBS and Nursing Students.

OBJECTIVES

To study the knowledge of hand hygiene among final year MBBS and final year B.Sc. Nursing students.

To study the practice of hand hygiene among final year MBBS and final year B.Sc. Nursing students.

To compare the knowledge of final year MBBS and final year B.Sc.Nursing students.

SCOPE OF THE STUDY

With “Clean Care is Safer Care” as a main agenda of the global initiative taken by WHO on patient safety programs,it is time for developing countries to develop the much-needed policies for implementation of practices,which will prevent the basic infection in health care setups.

METHODS AND METHODOLOGY

Study design

Descriptive cross sectional study

Study tool

Structured Questionnaire

Study setting

A tertiary care teaching hospital in Southern India.

Study Population:

Final year MBBS and Final year B.Sc. Nursing students.

Sample Size:

Total :175

MBBS (120) & Nursing (55)

Sampling Method:

Stratified Random sampling

Study Duration:

6 Months, (Dec 2015- April 2016)

Ethical Clearance: Protocol approval was taken from the Institutional Ethics Committee of the tertiary care teaching hospital. Medical and Nursing students were briefed on the content and nature of the study.A self-administered questionnaire containing a set of questions regarding hand-hygiene knowledge and practices was distributed to all participants.Knowledge was assessed using the WHO hand hygiene questionnaire for health care workers.

DATA ANALYSIS

Knowledge

The instrument used was the questionnaire on hand hygiene knowledge in health care workers originally developed by the WHO (2009)[11].The questionnaire had 28 items with both multiple choices and “Yes” or “No” questions in English.It took about 10 minutes to complete the questionnaire.The respondents were requested to

complete the questionnaire without any discussion with anybody else.The questions encompassed queries on washing hands/hand-rub, procedure for hand hygiene etc.Knowledge of both samples was analyzed based on the frequency & percentage and the mean & standard deviation of correct responses. To compare the knowledge of both samples, a statistical tool : Independent 2 sample t-test was used with p=0.05 (95% confidence interval),assuming the variance of both samples are equal and there is no significant difference in level of knowledge in both the groups.

Practice

For the assessment of practice,another questionnaire based on the knowledge questionnaire was designed.A total of 10 questions were asked.The purpose of the practice questionnaire was to assess the hand hygiene procedure compliance among the study population.It was assessed based on the highest frequency & percentage of options given.

RESULTS

There were a total of 175 study participants (55 nursing students and 120 medical students).Among these, a majority (83.3%, 140/175) had claimed to have received formal training in hand washing.

Knowledge

The knowledge score for hand hygiene among the Nursing students was 16.55± 3.023 (mean±SD).In MBBS students it was 15.39±3.331 (mean±SD) out of a possible maximum of 28. 73% of nursing students and 59% of MBBS students answered correctly that unclean hands of healthcare workers was the main route of transmission of potentially harmful germs between patients. 62% of nurses and 31% of MBBS students answered correctly that germs already present on or within the patient were the most common source of germs responsible for healthcare associated infections.

51% of nursing students and 43% of MBBS students correctly said that the minimal time needed for alcohol-based handrub to kill most of the germs present on the hands is 20 seconds. 24% of nursing students and 34% of MBBS students answered correctly that the minimum time needed for hand-wash to remove maximum germs on hands was 45 seconds. 78% of nursing students and 85% of MBBS students answered correctly that rubbing was the right hand hygiene method to be used before palpation of the abdomen. 31% of Nursing students and 22% of MBBS students answered correctly that rubbing was the right hand hygiene method to be used before giving an injection. 24% of Nursing students and 18% of MBBS students answered correctly that washing was the right hand hygiene method to be used before emptying a bed pan. 35% of nursing students and 48% of MBBS students answered correctly that rubbing/washing was the right hand hygiene method to be used after taking off the examination gloves. 36% of nursing students and 55% of MBBS students answered correctly that rubbing was the right hand hygiene method to be used after making a patient's bed. 98% of nursing students and 82% of MBBS students answered correctly that washing was the right hand hygiene method to be used after visible exposure to blood.

84% of nurses and 75% of MBBS students answered correctly that wearing jewellery is associated with an increased likelihood of colonization of hands with harmful germs. 91% of nurses and 90% of MBBS students answered correctly that damaged skin is associated with an increased likelihood of colonization of hands with harmful germs. 95% of nurses and 86% of MBBS students answered correctly that artificial fingernails are associated with an increased likelihood of colonization of hands with harmful germs. 56% of nurses and 49% of MBBS students answered correctly that regular use of a hand cream was not associated with an increased likelihood of colonization of hands with harmful germs.

If we compare the knowledge between MBBS & Nursing students, there is a significant difference (p=0.03),assuming the variance is equal i.e. the knowledge of nursing students is more than MBBS students (Independent sample t test).

Practice

93.1% (163/175) of the study sample used alcohol based hand rub for hand hygiene routinely.38% (21/55) nursing students & 48% (58/120) MBBS students said 30 seconds is the actual amount of time spent by them on each hand wash.A majority in both the groups -44% (24/55) & 41% (49/120) of Nursing and MBBS students respectively said 20 seconds is the actual amount of time spent by them on a hand rub (Table-2).A majority of Nursing & MBBS (80% & 68% respectively) students

said that they were aware of the WHO guidelines for hand washing,but only 9% & 18% respectively gave the correct answer when asked for the numbers of steps. 98%(43/44) of nursing students and 96%(78/81) of MBBS students said that they practice all the steps of hand washing,but 91% (50/55) of Nursing and 79% (99/120) of MBBS students did not know the correct number of steps.

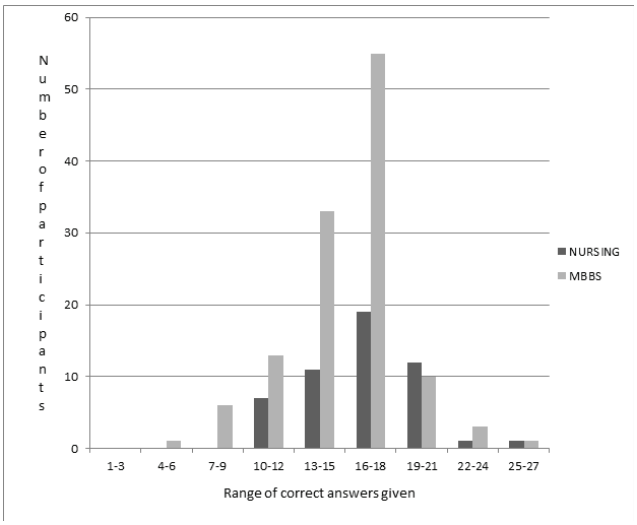

Figure1- Knowledge

DISCUSSION

The subjects involved in this study were assessed for knowledge and practice of hand hygiene. Interestingly, this study revealed that awareness & proper practice of hand hygiene was not satisfactory as the mean range of number of correct answers was 15-17 out of 28 questions. This was despite 83.3% of the sample having said that they got formal training in hand hygiene. The comparison of knowledge of the two groups showed that the nursing students were more knowledgeable than the MBBS students.

There was a significant difference in the level of knowledge among Nursing and MBBS students as found in similar studies where the knowledge of Nursing students was better than that of MBBS students.[12,13] Van de Mortel et al. in 2010 studied the hand hygiene knowledge, beliefs, and practices among nursing and medical students. They found that the knowledge of Nursing students was more than that of Medical students ($P < 0.01$), which is consistent with our study.[14]

CONCLUSIONS AND RECOMMENDATIONS

Hand hygiene procedures are the most efficient and cost effective techniques in preventing the spread of infection in healthcare settings, thus reducing the incidence of healthcare associated infections. Our study shows the significance of training programs on hand hygiene practices and the amount of time to be spent for effective hand washing. Continuous monitoring of performance and feedback is of utmost important to encourage them to follow the appropriate hand hygiene practices. The low levels of awareness show that there is a need for a planned schedule of training programs to train & re-train all health care professionals. It is of paramount importance to sensitize all health care professionals to the significance of hand hygiene.

Conflict of Interest: Nil

Funding: Nil

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DOI Numher: 10.5958/0976-5506.2018.01325.6

Efficacy of Interferential Therapy Versus Transcutaneous Electrical Nerve Stimulation to Reduce Pain in Patients with Diabetic Neuropathy

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ABSTRACT

Background: Diabetic neuropathy (DN) is possible and is the commonest among all long-term complications of diabetes mellitus(DM). Manifestations may be somatic or autonomic. Parasthesias involving the lower limbs are usually the earliest manifestations. In course of time numbness is found from loss or diminished sense of touch, pain, temperature, vibration and position sense in long – standing cases.

Transcutaneous electrical nerve stimulation(TENS) is a safe noninvasive treatment. This helps in blocking of pain gate mechanism.

Interferential therapy(IFT) is the application of two medium-frequency currents in order to produce an amplitude-modulated low frequency effect in the tissues.

Objective: Is to evaluate the effect of IFT vs TENS to reduce pain in patients with diabetic neuropathy.

Method & Methodology: 30 patients were arbitrarily selected and alienated into two groups (Group A and Group B) correspondingly. Group A was treated with TENS for 15mins/5times/week. Group B was treated with IFT for 15mins/5 times/week with an intensity obtained to an appropriate level with the control of the patient's feeling and with free exercises for both groups for a period of 4 weeks. The pre & post treatment values were extracted.

Results: Table .1 represents the pre and post values of Group A and B. Table.2 shows the comparison between both the groups A & B. Group B showed statistically more reduction in the intensity of pain when compared with Group A.

Conclusion: IFT is more effective in reducing pain in patients suffering with Neuropathic pain when compared with TENS.

Keywords: *Diabetic Neuropathy(DN), Diabetes Mellitus(DM), Interferential therapy(IFT), Transcutaneous electrical stimulation(TENS).*

INTRODUCTION

Diabetic neuropathy (DN) is possible and is the commonest among all long-term complications of diabetes mellitus. The incidence varies widely depending on age, nutritional status, duration, quality of glycemic control and criteria (subjective, objective & electrophysiological) for diagnosis. When we look for diabetic neuropathy, over 30% of patients who are attending diabetic clinics are evident[1].

Neuropathic manifestations may be somatic or autonomic. Parasthesias involving the lower limbs (legs and feet) are usually the earliest and the commonest

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subjective manifestations of diabetic neuropathy. In course of time numbness is found from loss of sensation follows. Sense of touch, pain, temperature, vibration and of position sense are diminished or lost in long – standing cases.

In addition to discomfort, all areas of patients' lives including sleep, mood, mobility, ability to work, interpersonal relationships, overall self-worth, and independence, are affected[1].

At times episodes of neuropathic pain (dysthesias, allodynia) may be severe so as to disturb sleep and disrupt work. These may last for variable periods. Clinical and electrophysiological evidence of diabetic peripheral neuropathy (DPN) is estimated to be about 70% in both type 1 & 2 diabetes mellitus[1].

In order of treating neuropathy, initially the blood glucose levels were brought to normal in order to avoid further damage to the nerves by using diabetic medications and monitoring the blood glucose levels. Along with this patients were advised to take opioids, NSAIDS, tricyclic anti-depressants. But due to its side effects experts recommend to avoid the medication[2].

So Non- Pharmacological treatments like a cupuncture, acupressure[3], infrared rays[4], pulsed magnetic fields[5 6], percutaneous electrical nerve stimulation[7], spinal cord electrostimulation[8], Transcutaneous electrical nerve stimulation[9] and Interferential therapies[10] were proposed

Transcutaneous electric nerve stimulation (TENS) can be used to describe a range of electrical currents including neuromuscular stimulation. TENS is a safe noninvasive treatment. It can be used for treating neuropathic pain and other types of pain. This helps in blockage of pain gate mechanism[9 11].

Gate control theory describes that if nonnociceptive fibers are stimulated they will inhibit the firing of nociceptive fibers at the laminae[12]. By applying TENS it will stimulate the firing of Aβ fibers which are nonnociceptive. They inhibits the activation of interneurons, thereby the firing rate of the nociceptive neurons will reduce[13].

Interferential therapy involves in the application of two medium-frequency currents to the skin in order to produce an amplitude-modulated low frequency effect in the tissues. It can be used to treat deeper tissues with pain[11 13].

When IFT is applied the activity in the large fibers takes preference over the small fibers when stimulated at 100Hz the pain gate will be closed. So that the pain information which is entering the central nervous system conscious level gets block, thereby pain will decline[14 15].

MATERIALS & METHODOLOGY

Subjects: Thirty patients, both males and females suffering with Neuropathic pain from atleast five years, were selected for the study from Vaagdevi Physiotherapy and Paediatric rehabilitation centre and MGM hospital with age between 45 – 60 years.

Type of study: Simple randomized experimental study.

Duration of study : 4 weeks

Inclusion Criteria : Patients diagnosed with Diabetic Neuropathy Patients presenting with Neuropathic pain

Patients with DN and who don't have any additional

Neurological, Cardiac & Orthopedic complications

Exclusion criteria: Patients suffering with neurological problems, renal disorders, vascular problems, long standing diseases, Orthopaedic and cardiac problems.

Outcome measures :

Mc. Gill Pain Questionnaire: This scale consists of 20 groups. Patients have to select 3 words from group 1-10 which best describes their pain, 2 words from

11-15, one word from group 16 and one word from 17-20 groups. After finishing the questionnaire patients have to select 7 words that best describe their pain. Patient can use various words more than once.

METHODOLOGY

30 patients were arbitrarily selected and alienated into two groups (Group A and Group B) correspondingly. Group A was treated with TENS with a frequency of 100Hz[16] for 15mins/5times/week. The intensity was in tune till Strong, rhythmic contractions were produced along with free exercises for lower limbs. Repetitive biphasic pulsed currents with an amplitude ranging

from 0 to 60 mA, pulse durations between 50 and 400 microseconds & pulse frequencies between 1 and 200 pulses per second were applied[17 18].

Group B was treated with IFT for 15mins/5 times/ week by creating an interference between the electrodes (by positioning electrodes properly) with an intensity obtained to appropriate level with the control of the patient's feeling and with free exercises. The parameters used for IFT were carrier frequency-4000 Hz, Base frequency -100 Hz, Sweep frequency -0 Hz were used[19].

Both the groups were comfortably positioned during treatment. Their pre and post treatment values were extracted to find the effect of TENS and IFT with free exercises after every week for four weeks and assessed for results by using Mc. Gill Pain Questionnaire.

RESULTS

Both the groups pre and post treatment values were extracted. Group A received TENS for four weeks, whereas Group B received IFT for four weeks. The pre and post treatment values were calculated by using **Kruskal-Wallis** test.

The test statistic is given by

$$H = \left[\frac{12}{n(n+1)} \sum_{j=1}^{c} \frac{T_j^2}{n_j} \right] - 3(n+1)$$

The calculated value for Group A (Pre & Post treatment values) is H= 49.54, here n=15 (>10) so the **kruskal-wallis test** is converted into chi-square test.

Whereas the calculated value for Group B (Pre & Post treatment values) is H= 53.22, with their mean and standard deviation.

TABLE 1: **Mean and Standard Deviation of Group A and B (Pre & Post Values)**

	GROUP – A		GROUP – B	
	Pre - Values	Post - Values	Pre – Values	Post – Values
MEAN	14.13	8.93	13.87	7.6
S. D	1.09	1.57	1.41	1.31

table value: $\chi^2_{(4)}$ d.f. = 9.488.

In both instances the calculated H value is greater than table value. So we reject the null hypothesis.

Later on, both the groups were compared significantly by using **wilcoxon – rank sum** test. The calculated Z= 2.178, (as n=15, so we used Z-test statistic)

TABLE 2: Comparision of Group A & B (MEAN & STANDARD DEVIATION)

	GROUP – A	GROUP – B
MEAN	8.933	7.6
STANDARD DEVIATION	0.4193	0.3491

table value: 5% LOS Z_{tab} = 1.96

When compared with the tabulated Z- value, the null hypothesis is rejected.

DISCUSSION

This study was performed to identify the effect of TENS Vs IFT in reducing Neuropathy pain in lower limbs. Patients were assessed for the intensity of pain by using Mc Gill Pain Questionnaire. The pre treatment values were extracted for both the groups and post treatment values were extracted every week for four weeks. After four weeks the pre and post treatment values were calculated in both the groups by using **Kruskal-Wallis** test.

There was a significant difference in the pain intensity of Group A which received TENS for four weeks (Mean: 8.933). Group B also showed significant difference in reduction of pain after receiving IFT for four weeks (Mean: 7.6).

Both the groups showed significant difference in reduction of pain when assessed with Mc Gill Pain Questionnaire.

Later both the groups were compared by using **Wilcoxon-Rank Sum** test.

Therefore the results of Group B (mean: 7.6) showed significant reduction in the intensity of pain when compared with the results of Group A (mean: 8.933).

CONCLUSION

Both the groups showed the results in sinking pain in Diabetic neuropathy patients. Whereas Group B (IFT group) showed marked decline in the intensity of pain when compare with Group A. Therefore IFT is extra effective in dropping the intensity of pain in the patients of Diabetic Neuropathy.

Conflict of Interest: Nil

Source of Funding: Nil

Ethical Clearence: IHEC/VCOP/VCOPH/2017/3/5

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DOI Numher: 10.5958/0976-5506.2018.01326.8

Translation and Validation of Mc Monnies (V2) Questionnaire English Version to Local Vernacular Language Kannada Version- A Pilot Study

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ABSTRACT

Purpose: To translate and validate the McMonnies questionnaire from English to Kannada. **Methodology:** Two subject teachers in Kannada and one Optometry student, native Kannada speakers translated the McMonnies questionnaire from English to Kannada. A single version was evolved from these three versions. A subject expert well versed in both languages back translated this version from Kannada to English. The study was conducted in accordance with the Declaration of Helsinki. Informed written consent was obtained from all patients prior to their enrolment in this study. The translated version was then used on 30 patients to check for reliability and repeatability. **Results:** This study showed good internal consistency of 0.720 using Cronbach's alpha analysis. The test-retest reliability indicated by Intra class correlation reported a value of 0.628. **Conclusion:** The results report that the translated and validated McMonnies questionnaire have good internal consistency and test-retest reliability. This can be administered among Kannada speaking population to diagnose dry eyes and plan further with management.

Keywords: *Dry eye, McMonnies questionnaire, Dry Eye Disease (DED), test-retest reliability*

INTRODUCTION

Dry eye is defined as a "multifactorial disease of the tears and ocular surface that results in the symptoms of discomfort, visual disturbance, and tear film instability with potential damage to the ocular surface. It is featured by increased osmolarity of the tear film and inflammation of the ocular surface" [1]. Based on self-report of dry eyes in the Beaver Dam Offspring cohort, prevalence of dry eye was reported as 14.5% (17.9% in women and 10.5% in men) [2]. The prevalence of Dry Eye Disease (DED) in India is 32%, 9.9% having mild DED; 61.2% having moderate DED; and 28.9% having severe DED. [3] Since dry eye is symptom based condition, there are a number of symptom based questionnaires available to check for the severity of the condition. McMonnies, Ocular surface disease index and Standard Patient Evaluation of Eye Dryness (SPEED) questionnaire are few among the lot often utilized in clinical decision making. Since India is a diversified nation with plenty vernacular languages and English as the second language, it's observed in routine practises that majority of population experience difficulty in comprehending complex medical terms in English and would rather prefer simplified medical terms in the vernacular language. Kannada is the state language well-spoken all across Karnataka among various sectors and classes of people. The need of local vernacular language (Kannada) based questionnaire is mandated as both rural and urban population is susceptible to dry eye due to the tropical weather setup in the state. This study makes an attempt in translating the Mc Monnies English dry eye questionnaire to Kannada and validates the Kannada set among a cohort of people to check for reliability and repeatability.

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Materials & methods: The study design was a prospective, cross sectional design from a period of August 2016 to February 2017. Study setting was the Optometry clinic, School of Allied Health Sciences, Manipal. As a pilot work, the sample size taken was 30. Subjects knowing to read and speak Kannada were included. Materials used was English validated McMonnies (V2) questionnaire. The study was conducted in accordance with the Declaration of Helsinki. Informed written consent was obtained from all patients prior to their enrolment in this study

Procedure:

1. The first step was to translate the McMonnies questionnaire from English to Kannada. Two teachers, native Kannada speakers and one Optometry student (fluent in Kannada) unaware of the McMonnies questionnaire translated the questionnaire from English to Kannada independently.

2. Then a panel consisting of three Optometry faculties and a clinician from Respiratory therapy, all well versed in English and Kannada, arrived at one version of the Kannada questionnaire from the three versions submitted by the teachers and the Optometry student.

3. One English speaker (Professor in Communication), also well versed in Kannada being unaware of the McMonnies English questionnaire, back translated the draft from Kannada to English. This new back-translated English version was then given to the panel.

4. The panel then compared the back-translated English questionnaire with the original McMonnies questionnaire to check for the reliability of the questionnaire.

5. The application of the Kannada version of the questionnaire was done in a pilot study (n=30). The questionnaire was administered to the 30 subjects and asked for the comprehension of questions. The subjects were asked to report errors and suggest change in words to make them understand the questionnaire better. None out of 30 neither reported errors nor changes for the translated questionnaire.

6. After a period of 2 weeks, the translated questionnaire was administered to the same set of 30 subjects to check for its repeatability.

The data was analysed using Statistical Package for the Social Science (SPSS) Version 20. Cronbach's Alpha was used to check for internal consistency. Intra Class Correlation was used to check for the test-retest reliability.

RESULTS

The 30 candidates in the pilot study were between the ages of 18 to 60 years. Out of 30 candidates 15 were males and 15 were females. Content Validity**:** A panel of five evaluated the questions from three translated versions. Only questions accepted by at least three out of the five experts were included in the questionnaire. Back and forth translation, integration and pilot check of items was the involved process here. Reliability and Repeatability: Cronbach's alpha was 0.724, which tested for internal consistency. The test-retest reliability was indicated by Intra class correlation, with a value of 0.628. Both the results were above 0.70, reporting a good reliable and repeatable result for this questionnaire.

Discussion: This study reported a good reliability and repeatability of translated Kannada, 14 itemed Mc Monnies dry eye questionnaire. 0.724 value of Cronbach's alpha tested for internal consistency showed a greater strength. The test-retest reliability used for Intra class correlation reported a value of 0.628 showing good test-retest reliability.

A symptom questionnaire is an important tool used to quantify and qualify the impact of a disease on a patient's related quality of life and to estimate the prevalence of a certain condition within a population.

A study by Castro J et al [4] reported the process of translating symptom questionnaire from DEWS (Dry Eye WorkShop) to Portuguese and back translating the dry eye symptom questionnaire, comparing the results of the initial application and the re-administration of this questionnaire to a sample of 30 individuals indicated excellent concordance in results, repeatability, and reliability. This process was incorporated in this study as well.

A study by Pakdel et al [5]developed and validated a Farsi version of Ocular Surface Disease Index (OSDI) for the Iranian population. Four bilingual (English-Persian) individual including three physicians and one native English teacher were asked to translate the original English OSDI questionnaire in Farsi. Following

back and forth translation, integration and pilot check, the translation team came to consensus on translation. As a result the Farsi-OSDI showed acceptable internal consistency and test-retest reliability. Similar method of translation and validation was used in this study.

Dry eye, a multifactorial disease with varied severity of discomfort hindering the daily tasks performance with compromised quality of life can be well diagnosed now with this translated Kannada McMonnies questionnaire in the state language of Karnataka. This will further assist the clinician in planning the management of dry eye condition and thus improving the quality of life.

CONCLUSION

The results show that the translated and validated McMonnies questionnaire have good internal consistency and test-retest reliability. This symptom based questionnaire can be administered among Kannada speaking population to check for the severity condition and plan for effective management.

This article is an original material. It has not been published in any other journal.

Conflict of Interest: Nil

Source of Funding: Self

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DOI Numher: 10.5958/0976-5506.2018.01327.X

Vitamin D Levels in Late Pre-Term Neonates and its Association with Sepsis

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ABSTRACT

Vitamin D deficiency is a major health concern & prevalence rates in preterm neonates is still not well defined. Role of Vitamin D deficiency in critically ill patients with sepsis has been reported in the adult population. This study aims at studying Vitamin D levels in late preterm neonates and its association with sepsis.

Objectives : To estimate & identify Vitamin D deficiency in late Pre-termers, in turn studying their levels in late onset sepsis and estimating the change in Vitamin D levels with the onset of sepsis.

Methodology: A total of 120 late pre-termers were included in the study. Gestation age calculated by New Ballard's score. Structured pro-forma recorded birth details. Baseline vitamin D levels of all babies were obtained on day 4).Those 67 neonates with features of late onset sepsis either clinically/haematological/ culture were sub-grouped as cases & remaining 53 were controls. Subsequent vitamin D level was estimated in septic cases after 48 hours of onset

Results: Mean value of vitamin D on day 4 was 18.9 indicating vitamin D deficiency ($p<0.001$). There was no difference in baseline vitamin D levels in those who developed sepsis and those who did not. Amongst cases, mean value of Vitamin D before onset of sepsis was 26.27ng/ml and 19.29ng/ml after 48 hours of onset; indicating a highly significant drop in vitamin D within 48 hours of onset of sepsis($p<0.001$).There was no significant association between culture proven sepsis & vitamin D deficiency. Vitamin D deficiency does not predispose to sepsis.

Conclusions: There is need to establish normal Vitamin D levels in our population. There is no evidence in this study to say Vitamin D deficiency predisposes to sepsis. However there is significant drop in vitamin D levels with onset of sepsis.

Keywords : *Vitamin D, Late Preterm neonates, Late onset sepsis.*

INTRODUCTION

Vitamin D or 25- hydroxyvitamin D is a pre-prohormone which has complex effects on metabolism and immune function, beyond bone and calcium metabolism. Vitamin D is synthesized from 7-dehydrocholesterol in the skin. Vitamin D binding protein transports the vitamin D3 to the liver where it is hydroxylated to 25(OH)D (the inactive form of vitamin D) & then hydroxylated by the enzyme 1-alpha-hydroxylase to its active form $1,25(OH)_2D$ in the kidneys. This enzyme exerts its action in various extra-renal sites, including osteoclasts, skin, colon, brain, and macrophages. The half-life of vitamin D in the liver is approximately 3 weeks. Serum concentration of 25(OH)

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D is the best indicator for judging the vitamin D status in patients with vitamin D-related disease states. Vitamin D deficiency has been historically defined and recently recommended by the Institute of Medicine (IOM) as a 25(OH)D of less than 20 ng/ml. Vitamin D insufficiency has been defined as a 25(OH)D of 21–29 ng/ml. It has been estimated the serum 25(OH)D levels of 20 ng/dL meet the needs of at least 97.5% of population across all age groups in developed countries. Hence it has been concluded by IOM that 25(OH)D levels >20ng/dL indicates vitamin D sufficiency . Levels of 25(OH)D that are 15 ng/dL or less are considered as deficiency and 5 ng/dL or less are considered as severe deficiency[1].

MATERIALS AND METHOD

The study was a prospective case control study, conducted at a tertiary care hospital NICU, Mangalore,India. The study included all preterm neonates born between 34 to less than 37weeks period of gestation(late preterm neonates). Those late preterm neonates who crossed 37 weeks of gestation at the onset of sepsis were excluded from the study.

A total of 120 late pre-termers were included in the study after obtaining clearance from the Ethical committee. Gestation age was calculated by New Ballard's score. Structured pro-forma recorded birth details, clinical evaluation, and all hematological investigations. Baseline vitamin D levels of all babies were obtained on day 4 (to exclude confounding maternal factors and early onset sepsis).Those 67 neonates with features of late onset sepsis either clinically/hematological/culture were sub-grouped as cases & remaining 53 were taken as controls. Subsequent vitamin D level was estimated in septic cases after 48 hours of onset. Vitamin D levels were analyzed using ELISA kits. Vitamin D status of pre-termers were defined as per US Endocrine Society Classification.

Results were analysed using SPSS software version 17.0. Associations were derived using Chi Square and Fischer's exact test. A p value of <0.05 was considered significant.

RESULTS AND ANALYSIS

A total of 120 preterm neonates were taken into the study after satisfying inclusion and exclusion criteria. All preterm babies included in the study were matched for gestational age(34-36weeks).Majority of the preterm neonates were male babies (61.67%) & a significant proportion of the study group belonged the Hindu community(77.5%)(p<0.001).The study had 69.2% of the babies being born to primigravida mothers and 30.8% of them to multigravida mothers.

In the study group, the mean value of vitamin D on day 4 was 18.9 + 6.009 indicating vitamin D deficiency (p<0.001). A total of 70 % of all the preterm neonates in the study were Vitamin D deficient & 86.6 percent of the total had their vitamin D levels in the deficiency/ insufficiency range. Retrospectively Vitamin D levels were analysed between cases and controls and there was no statistical difference between the two subgroups.

Out of the cases analysed 62.7% were males and 37.3 % were females. Out of the 67 cases, 76.2% had Vitamin D deficiency/insufficiency & 23.8% were sufficient in Vitamin D levels.

A total of 39% of the cases isolated organisms in their blood cultures. More than half of the blood cultures isolated Gram negative organisms. Out of the 26 cases which isolated organisms in blood cultures, 65.38% were Vitamin D deficient/insufficient and 34.62% were sufficient in Vitamin D levels. There was a statistically significant relationship between blood culture proven(Gram Negative) Sepsis and Vitamin D deficiency/insufficiency indicating a significant association between culture proven sepsis and vitamin D deficiency(p=0.036).(Table 1)

There was no significant relation between vitamin D levels and CRP levels before and after the onset of sepsis in the cases. Similarly there was no relation between neutropenia and Vitamin D levels in the cases. In the preterm neonates with late onset sepsis (cases), 92.5% of them survived and 7.5 percent of them expired (no statistical significance). Only 7.9% 0f the cases who had vitamin D deficiency/insufficiency expired.There was no difference in baseline vitamin D levels in those preterm neonates who developed sepsis and those who did not. Of the cases, 76.11% of them were Vitamin D deficient/insufficient and 23.89% had sufficient levels of vitamin D.

The mean value of Vitamin D in the septic neonates (cases) before the onset of sepsis was 26.27ng/ml and 19.29ng/ml after 48 hours of onset. There was a highly significant drop in the levels of vitamin D within 48 hours of onset of sepsis(p<0.001).

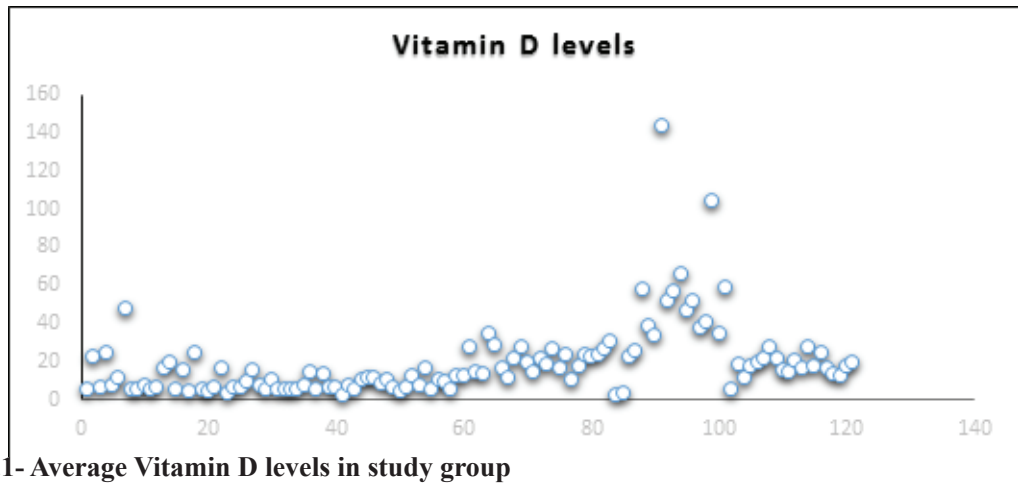

Figure.1- Average Vitamin D levels in study group

Table 1.Vitamin D Deficiency and type of organism in Blood culture

		25 OH Vit D(ng/ml)		
		DEFICIENCY /INSUFFICIENCY	SUFFICIENCY	Total
Culture positive	Fungal	3	6	9
		33.3%	66.7%	100.0%
		18.8%	66.7%	36.0%
	Gram negative	11	3	14
		78.6%	21.4%	100.0%
		68.8%	33.3%	56.0%
	Gram positive	2	0	2
		100.0%	.0%	100.0%
		12.5%	.0%	8.0%
Total		16	9	25
		64.0%	36.0%	100.0%
		100.0%	100.0%	100.0%

Fishers exact test p=.036, sig.

Table 2.Vitamin D levels at onset of sepsis and 48 hours later

Group	Mean	Std. Deviation	diff	diff(%)	Wicoxon signed rank test p value
25 OH Vit D(ng/ml)-before	26.27	22.37	6.98	26.59	0.000<0.001, HS
25 OH Vit D(ng/ml)-after	19.29	11.78			

McNemer test p=.000<0.001, HS

Cont...

		25 OH Vit D(ng/ml)-after		
		Deff/insuf	suf	Total
25 OH Vit D(ng/ml)-before	Deff/insuf	51	0	51
		100.0%	.0%	100.0%
		91.1%	.0%	76.1%
	suf	5	11	16
		31.3%	68.8%	100.0%
		8.9%	100.0%	23.9%
Total		56	11	67
		83.6%	16.4%	100.0%
		100.0%	100.0%	100.0%

M**c Nemer test p=0.05, sig**

DISCUSSION

Vitamin D deficiency is becoming a major health concern & although prevalence rates in preterm neonates is still not well defined, in reality may be very high. Literature on Vitamin D levels in preterm neonatal sepsis are sparse in India. Alok Sachan et al observed a high prevalence of vitamin D deficiency in pregnant mothers and newborns from India, a country with abundant sunlight.

In our pilot study of vitamin D levels in late preterm neonates and its association with sepsis , the mean value of vitamin D estimated on day 4 was 18.9 indicating vitamin D deficiency ($p<0.001$). *Dijkstra H S et al* in their study on 'High prevalence of vitamin D deficiency in newborn infants of high-risk mothers' showed a high prevalence (42.5%) of newborns being vitamin D deficient, considering serum 25-hydroxyvitamin D <25ng/ml as vitamin D deficiency[2].

However, *Alok Sachan et al* reported a low mean value of vitamin D (8.4±5.7 ng/ml) in 95.7% of neonates, considering serum 25-hydroxyvitamin D <20 ng/ml as deficiency[3].As our observation is in concordance with other studies, more studies are required to set normal Vitamin D levels in newborns in our country in general, & preterm neonates in particular.

Studies in adult population have reported an association between low levels of vitamin D and sepsis -

A prospective cohort study by *Ginde. Et al* in 2011, of adults admitted from Emergency Department with suspected infection showed 79 % of them having Vitamin D <30ng/ml with increased severity of sepsis at admission and at 24hours[4].

A Case-control study by Jeng et al in 2009, reported plasma vitamin D & vitamin D binding protein concentrations were significantly lower in critically ill subjects with sepsis compared to critically ill subjects without sepsis. In our study, there was no difference in baseline vitamin D levels in those preterm neonates who developed sepsis and who did not. However all the vitamin D deficient neonates did not acquire sepsis, raising questions whether Vitamin D deficiency is a risk factor for sepsis in contrast to adults.

There was a significant drop in vitamin D levels($p<0.001$) in those preterm neonates who developed sepsis(26.27ng/ml at the onset of sepsis and 19.29ng/ml 48 hours later). Half life of Vitamin D is around 3 weeks & biological degradation of Vitamin D cannot be resulting in such a rapid fall in 48 hours.

Our study showed a significant association between Gram negative sepsis and Vitamin D deficiency in preterm neonates ($p=0.036$); whether this association is a 'cause or effect' needs to be established. *Sadegi et al* demonstrated that human monocytes stimulated with LPS (produced by Gram negative bacteria) & treated with Vitamin D(1,25 (OH)D) showed a dose dependant decrease in inflammatory markers of sepsis. These effects were reversed with introduction of VDR antagonists, thus reinforcing a key role of Vitamin D in the signalling mechanisms of Gram Negative organisms.

It is known that hypocalcaemia and increased levels of calcitonin precursors are common in critically

ill patients especially those with sepsis. *Muller B. et al* studied a positive association of raised calcitonin precursors in sepsis with hypocalcaemia, however there was no significant change in circulating Vitamin D levels during sepsis[5].Our study did not document hypocalcaemia in any of the babies in view of supplemental calcium prophylactically administered preterm neonates as a unit protocol.

CONCLUSIONS

Majority of the preterm neonates in the study group were vitamin D deficient.There was a significant drop in vitamin D levels within 48 hours, in those preterm neonates who developed sepsis . In our study, Vitamin D deficiency was not a risk factor for sepsis in preterm neonates.There is a strong correlation between vitamin D deficiency & Gram Negative Sepsis.

Ethical Clearance- Taken from institutional ethics committee

Source of Funding- Self

Conflict of Interest - Nil

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DOI Numher: 10.5958/0976-5506.2018.01328.1

Interprofessional Assessment of Accessibility to Public Buildings by Individuals with Visual Impairment: A Report from Udupi Taluk – A Pilot Study

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ABSTRACT

Background: Built environment majorly influences the accessibility of a differently abled person. Under the preface of the initiative of Accessible India campaign from the Government of India to build an accessible environment, this study aimed to conduct systematic audits of various public places commonly accessed by people.

Objective: To audit a few public sector offices with the aid of a standardized checklist and understand the extent of barrier-free, safe built-in environment for the visually impaired.

Method: An interprofessional team comprised of members who had experience in fields such as accessibility, ergonomics & workstation research such as professionals from architecture, vision care, physiotherapy and occupational therapy carried out on-site audits, compiled data and finalized the reports. We used a comprehensive audit checklist for assessing accessibility to public buildings by individuals with visual impairment. Investigators purposively selected four buildings (District civil court, District Commissioner's office, an insurance office and nationalized bank) for the audit in a time span of 6 months.

Results: The audit reports were categorized as circulation spaces, building facilities and communication and information for each public building. The overall adherence to accessibility standards was 18%, 35%, 21% and 14% at District court, District Commissioner's office, an insurance office and nationalized bank respectively.

Key-words: *Built environment, visually impaired, mobility, interprofessional team, audit, accessibility*

INTRODUCTION

Built environment majorly influences the accessibility of a differently abled person. A direct association between the living or working space and safe mobility safety is well addressed.[1] As per World Health Organization (WHO), "Disability is a complex phenomenon reflecting the interaction between features of a person's body and features of the society in which he or she lives. Overcoming the difficulties faced by people with disabilities requires interventions to remove environmental and social barriers". Low vision and total blindness are the leading causes for visual disability according to the Persons with Disability Act 1995 (PWD). In a study conducted in Jhajjar district of north India, the prevalence of visual impairment was 24.5% (95% CI 21.1 to 26.3) and blindness was 5% (95% CI 3.9 to 6.1). [2] Environmental interactions influence the safety, mobility and overall participation of individuals with visual impairment (IWVI). [3] IWVI are prone for

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higher incidences of falls and other safety concerns due to environmental concerns. [4] Numerous advocacy groups recommend that public health agencies need to identify environmental factors that may enhance or impede participation of IWVI. Understanding the needs of IWVI and analysing the built environment may help in mitigating the barriers towards participation.

Government of India has launched "Accessible India Campaign (Sugamya Bharat Abhiyan)", a flagship programme and nation-wide campaign to create barrier free environment for person with disabilities. It targets on creating physical infrastructure, accessible and inclusive for persons with disabilities and also attempts in making public buildings, transport system and communication technology accessible to all. Government of India has harmonized guidelines and standards for barrier free environment for elderly and persons with disability. The program assures undertaking access audits for all existing buildings under central government and provide retrofitting to make them inclusive.

Interactions of an individual with environment is multifaceted and hence it needs the views and understanding of multiple professionals and stakeholders. The combined efforts of architects, designers, health care providers and planners are essential in providing a user friendly built environment for people with disabilities. With this need, this study aimed to audit and understand the available facilities at public buildings using an interprofessional team with a focus on needs of IWVI. Methods:

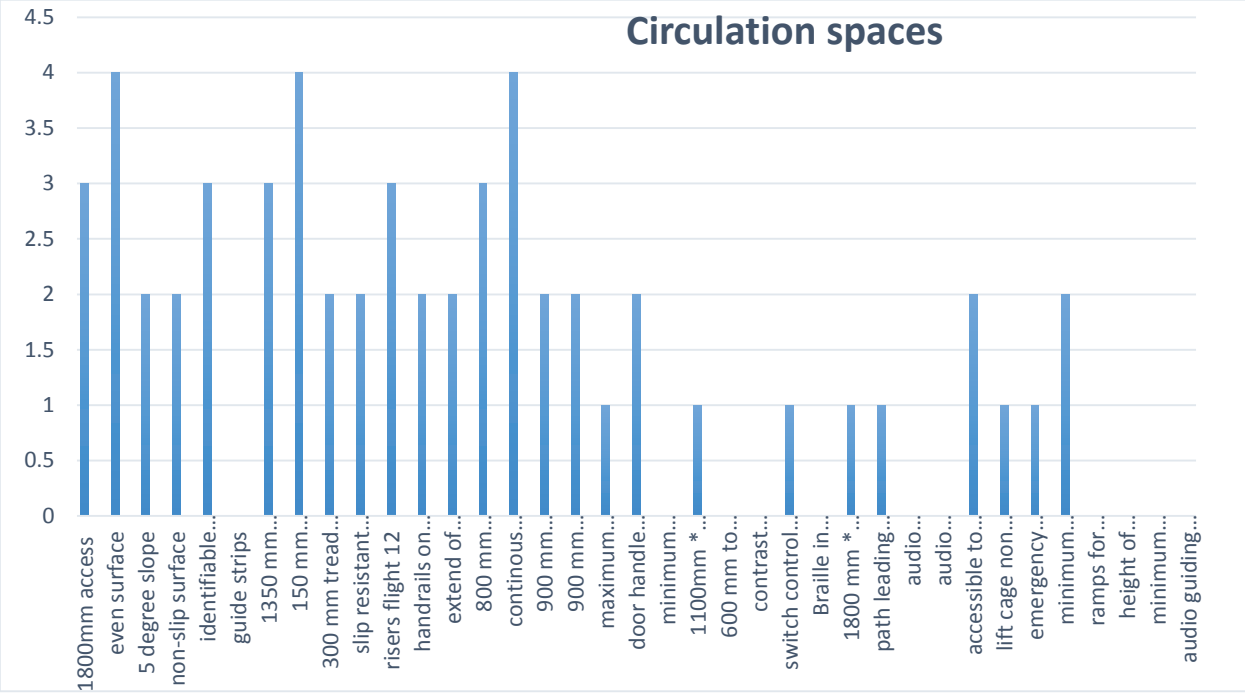
Procedure:

A team of professionals specialized in research related to ergonomics considered the validated comprehensive survey list from the Indian Institute of Architects, Nagpur chapter and planned for the on-site audit surveys by including required points from the survey list. This interprofessional team comprised of optometrist, physiotherapist, occupational therapist and architects. Formal meetings were conducted to sensitize them on the need of study and the importance of interprofessional practice towards holistic community care. We also discussed various activities involved in project along with their role as a participant. . The study was approved by the Institutional Research Committee, SOAHS, MAHE. Since this study did not involve any human subjects, a wavier was obtained from the Institutional Ethical Committee, Kasturba Hospital.

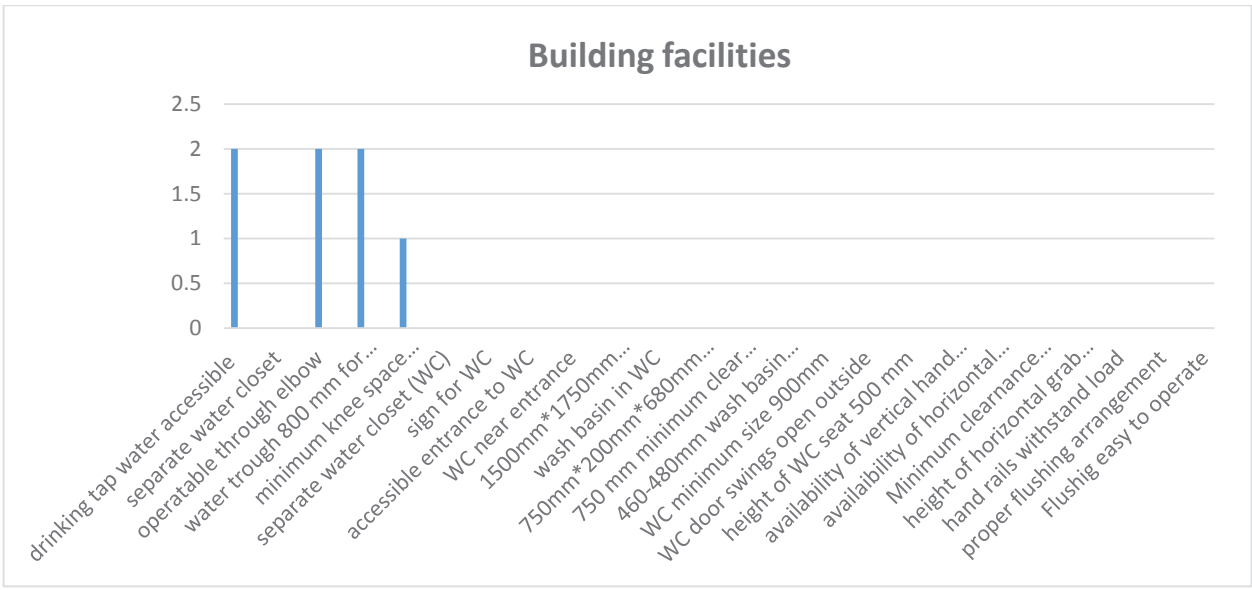
The most commonly accessed public buildings providing a variety of services were selected using purposive sampling. Administrative permissions from the building officials were obtained. We categorized the buildings under government offices and banks/ insurance offices. The team audited District Court, District Commissioner's office, Life Insurance office and a nationalized bank in Udupi taluk. The facilities were audited using this checklist and supportive photos were clicked as evidence to the activity.

RESULTS

The buildings assessed under this audit were categorized based on the features. Assessment was undertaken only of those areas accessed or permitted to be accessed by community. The audit report was categorized to 3 sub-sections; circulation spaces, building facilities and communication and information. Circulation spaces are areas that provide access to all the spaces within a building. In this study horizontal and vertical circulation spaces available in each building was assessed. A building has specific features that provide services as per the typology of a building. Hence, service facilities at each building was considered for the audit. The overall compliance to CPWD guidelines are 18%, 35%, 21% and 14% for District court, District commissioner's office, Life insurance office and nationalized bank respectively. In reference to information and communication, none of the buildings had facilities such as braille scripts, emergency exits, signage with LED etc.



Graph 1: The number of buildings adopting the set characteristics under circulation spaces as mentioned in the survey list.



Graph 2: The number of buildings adopting the set characteristics under building facilities as mentioned in the survey list.

DISCUSSION

We found lack of compliance to basic amenities in these four buildings. Though mentioned in the CPWD guidelines, most of the basic amenities were absent in these facilities. Access pathway components was fairly compliant in most of facilities. Lack of properly identifiable staircases, guiding strips was found. One of the community buildings, an important government office having a wide population of people using lacked the lift facility. The steps was unscientifically structured and most of the office proceedings were held either in first floor or second floor. People with disability and elderly had lot of difficulty in moving around. Toilets were also no properly designed and most of the facilities had faulty, non-maintained structures in all the four buildings. The audit report shows that the compliance percentages at extreme values with majority as not compliant at all. Certain features if available have been documented as 100% like availability of elevators or

drinking water facilities. The most compliant features were the horizontal circulation spaces including corridors, access routes, and entrance and exit pathways. However, considering the requirement for individuals with visual impairments, there is lack of compliance. This can be understood from lack of availability of guiding pathways, audio tracking, and braille maps and guides. Information and communication are the least compliant features in all the public buildings assessed. Lack of access friendly spaces in public buildings have hindered participation of individuals with visual impairments. Access to public buildings is an essential requirement for empowerment of individuals with disabilities.

These findings are in line with a study performed on functional aspects to public buildings and facilities wherein the authors suggested that knowledge of such barriers and facilitators is crucial in improving the environmental access. [5]

Limitations and future implications:

Though the investigators requested for assessment of all features in these public buildings, permission could be obtained only for specific areas. The audit method used can be reported in the format of compliance percentage. Though this report gives an insight that there has to be focused work towards accessibility in public buildings, efforts are required to understand the needs of users which varies with percentage of impairments, age, functional abilities and use of assistive devices.

Conflicts of Interest: None

Acknowledgment: This research was conducted during the primary author's M-FIILIPE (MAHE FAIMER International Institute for Leadership In Interprofessional Education) fellowship program. Authors here thank the mentors from M-FIILIPE who provided insight in the output of this paper.

Source of Funding: Self-funding

Declaration of Interest Statement

There is no **Conflict of Interest** encountered. This study hasn't received any financial support.

Originality: This article is an original material. It has not been published in any other journal.

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DOI Numher: 10.5958/0976-5506.2018.01411.0

Assessment of Hand Washing Practices among School going Children- A Cross Sectional Study from India

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ABSTRACT

Background: Hand washing plays a pivotal role in the containment of various diseases and infections among school going children. With proper knowledge and education children should be encouraged to follow good hand washing practices from an early stage of their life.

Study design: School based cross- sectional study

Method: Data were collected using interview questionnaires and hand washing facilities inspection was also done using observation checklist. Data was entered and analyzed by EpiData software version 2.2.2.186 and Stata analysis software.

Results: Study participants had proper knowledge of hand washing and also practiced the same.

Conclusions: Our study revealed that good number of study participants practiced hand washing behavior. Availability and accessibility of water and soap all the time will further achieve good compliance of hand washing practices among school children.

Keywords: *Good compliance, Infection rate, Hand washing practice, predisposing factors*

INTRODUCTION

Hand hygiene is regarded as one of the most important element of infection control activities. Increasing severity of illnesses and complexity of treatment, stress the need for reversing back to the basics of infection control by simple measures like hand hygiene[1,2]. Superimposed by pathogens, contaminated hands play a major role in the transmission of the fecal-oral transmission of the diseases[3,4,5].

Children tend to contaminate their hands more frequently compared to adults. Also, children suffer disproportionately more with diarrheal and respiratory illnesses[6,7]. Washing hands with soap is the most common and inexpensive method to get rid of the microorganisms[8].

Schools play a major role in inculcating the good habits among children. Proper knowledge and education regarding the good practices of hand washing and hand hygiene at the school level itself will make the students live a healthy and disease free life in the long run[9].

Washing hands frequently reduces the overall burden of potential pathogens from the hands; thereby reducing the transmission of illnesses like diarrhea and respiratory diseases. Effectiveness of hand washing is achieved better when it is a regular practice to wash hands with soap before meals and after defecation[10,11].

Lack of resources like availability of soap and clean water facility paves way for acquiring communicable diseases more easily among school children. Inadequate knowledge and poor hand hygiene practices also play a major role in increasing the burden of intestinal parasitic

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infections among school children especially in the developing countries[6].

Our study was intended to find out the existing knowledge and attitude of the school children towards the relevance of washing hands and also the use of soap[12,13]. Addressing the issues like hand hygiene and infection control from a younger age has to be an integral part of daily routine.

MATERIALS AND METHOD

Present study was carried out in the Department of Microbiology, for a period of two months from July to August 2017. The school was located 10 km from our Institution (Sri Venkateshwara Medical College Hospital and Research Centre) at Kandamangalam, Tamilnadu.

A school based cross-sectional study involving quantitative method was adopted among the randomly selected students. The study population included students in grades 6, 7 and 8 during the 2017 academic year.

Sample size determination and sampling procedure

Considering the proportion of ideal hand washing time 90.5% [8], 95% confidence interval, designs effect-1 and 10% of non-response, the sample size was calculated using OpenEpi software as 133. Multistage sampling technique was used to select the study subjects. Eligible students were selected using simple random sampling technique.

Data quality management

Data quality was ensured at every stage like during collection, coding, entry and analysis. The filled questionnaires were checked for completeness and consistency on a daily basis.

Data processing and analysis

Data was analysed by Epidata Software version 2.2.2.186 and by Stata analysis software. Descriptive analyses were performed for all the variables. Bivariate analysis was performed to observe the crude relationship between the independent variables and the outcome variable. Multivariate logistic regression was also performed on the final analysed data to identify the independent effects of significant variables. P value less than 0.05 were taken as significant.

Measurement

Based on the data collected via questionnaire, hand washing practice was assessed based on two criteria i.e. hand washing with soap after using toilet and hand washing with soap before eating. The 5 frequency table as prepared and dichotomized wherein those who answered 1=always to 2=very often were classified as washers (scale 0) and 3=often to 5 =never were classified as non-washers (scale 1). These dichotomized items were added up to create summative index point wherein students who reported 1=always to 2=very often for both criterion were classified as in proper hand washing category.

Knowledge on hand washing was assessed based on six questions related to infectious diseases and their transmission; critical times of hand washing; health outcome associated with hand washing. In each item, those who answered correctly scored 1 and those who answered incorrectly will score 0. Those who scored 3 and more were classified as having sufficient knowledge and those who scored 2 and less were classified as having insufficient knowledge regarding hand washing practice.

Attitude towards hand washing was assessed based on the belief about hand washing with soap using5 point Likert scale. The scale ranging from 1=strongly disagree to 5=strongly agree was dichotomized and was added up to create summative index. Students were classified as having positive attitude towards hand washing practice if they answered 1=strongly disagree or 2=disagree whereas students were classified as having negative attitude towards hand washing practice if they answered 3=neutral to 5= strongly agree.

Ethical consideration

The study was started after obtaining the consent from the Institutional Ethics Committee and prior permission from the Dean of the college and Principal of the School was obtained for the study.

RESULTS

The study included 133 school going children who belonged to the age group 9-12 years. As per their educational status, 39 (29.3%) belonged to grade five. Among the total participants, 83 (62.4%) of children were males and 75 (56.4%) were from urban areas. 42 (31.6%) of the study participant's family occupation was civil servant and 86 (64.7%) of the student's parents

were educated (Table 1).

Table 1: Socio-demographic characteristics of the study participants (N=133)

Variables		Frequency	Percent
Age	9 years	39	29.3
	10 years	35	26.3
	11 years	24	18.0
	12 years	35	26.3
Sex	Male	83	62.4
	Female	50	37.6
Grade of students	Grade five	39	29.3
	Grade six	35	26.3
	Grade seven	24	18.0
	Grade eight	35	26.3
Residency	Urban	75	56.4
	Rural	58	43.6
Family occupation	Civil servant	42	31.6
	Farmer	27	20.3
	Shop owner	38	28.6
	Daily laborer	26	19.5
Parent's educational status	Educated	86	64.7
	Uneducated	47	35.3

Hand washing practice

Among all the children, 86 (64.7%) and 75 (56.4%) of them washed their hands with soap after using toilet and before eating respectively. According to the criteria defined in the measurement, proper hand washing practice was performed by 91 (68.4%) of the children (Table 2).

Table 2: hand washing practice of school going children (N=133)

Variables		Frequency	Percent
Washing hands with soap after using toilet	Yes	86	64.7
	No	47	35.3
Washing hands before meal	Yes	75	56.4
	No	58	43.6
Hand washing practice	Proper	91	68.4
	Improper	42	31.6

Predisposing factors (knowledge and attitude) for school children's hand washing practice

According to the measurement criteria defined for knowledge of hand washing practice, 80 (60.2%) were found to have sufficient knowledge whereas 53 (39.8%) had insufficient knowledge. Similarly, 88 (66.1%) children had positive attitude towards hand washing while 45 (33.9%) showed negative attitude towards hand washing practice (Table 3).

Table 3: Predisposing factors for school children's hand washing practice (N=133)

Variables		Frequency	Percent
Can germs be acquired when desks, door, books and animals are touched?	Yes	92	69.2
	No	41	30.8
Do poor hand washing cause diseases?	Yes	76	57.1
	No	57	42.9
Is water only enough for hand washing?	Yes	84	63.2
	No	49	36.8
Is hand washing with soap needed after coughing or sneezing	Yes	85	63.9
	No	48	36.1
Is failure to wash hand transmits infectious diseases?	Yes	90	67.7
	No	43	32.3
Knowledge	Sufficient	80	60.2
	Insufficient	53	39.8
If you wash your hands really well with water you don't need to use soap?	Yes	91	68.4
	No	42	31.6
You only need to wash your hands with soap if they look dirty or smell bad?	Yes	97	72.9
	No	36	27.1
Is washing your hands with soap is important before eating?	Yes	77	57.9
	No	56	42.1
Attitude	Positive	88	66.1
	Negative	45	33.9

Enabling factors for children's hand washing practice

The school chosen for our study had twenty toilets. From this toilets, 15 (75%) of them had hand washing station which was placed outside the toilets. Among all the washing station only water supply was present at the time of observation and no soap facility was available for washing the hands.

Factors affecting hand washing practice among school children

When data was analyzed by multivariate logistic regression analysis using STATA software, family occupation and parent's educational status was statistically significant. From the socio demographic profiles of the school children, children whose parents belonged to farmer category showed significant association with proper hand washing (AOR: 7.07, 95% CI: (1.72, 29.11)). Similarly, school children whose parents were educated performed proper hand washing practice when compared with the uneducated category (AOR: 42.73, 95% CI: (1.96, 929.37)).

DISCUSSION

Our school based cross-sectional study with the objective of assessing the proper hand washing practice among the school going children was conducted in Kandamangalam town, in Tamilnadu. The results from our study showed a good proportion (68.4%) of school children had proper hand washing behavior whereas the rest (31.6%) of children showed improper or poor hand washing behavior. The findings of the study were in contrast with the other studies wherein the results showed poor rate of hand washing practice among school children[14, 15].

Participants in our study were from both urban and rural area wherein majority 56.4% were from the urban area. Though residency plays an important role in proper hand washing, in our study we could not find it statistically significant as reported in a study from Ethiopia[14].

Among the many factors, the key predictor of hand washing practice among school going children was parent's educational status. In this regard, children whose parents were educated showed statistically significant result with proper hand washing practice behavior when compared to the children whose parents

were uneducated. This could be due to the high level acceptance of national initiatives like hand washing practices by the parents and their children. Also, in our study a statistical significant association was found for proper hand washing practice among the children whose parents were in the family occupation of Farming (farmers).

The other factor for proper hand washing practice in children was easy accessibility of water and soap at school and at home. In this study, the unavailability of resources like soap was found to be preventive factors for children adopting improper hand washing practice. This finding was in line with other studies done from different parts of world[17-21]. Also, WHO recommended that hand washing with soap is one of the most important hygiene behaviors which should be promoted among school children[22].

Our study findings indicate majority of them had sufficient knowledge about important aspects of hand washing practice which was in accordance with the study from Odisha, India[23].

In the same manner, attitudes, which also reflect the degree of positive or negative behavior of an individual, were not found to be statistically important in predicting hand washing practice in our study. The attitude of a person is shaped by the salient beliefs, various perception and subjective value of the outcome result which could affect the hand washing practice[24].

According to the WHO guidelines, for an effective school WASH, one toilet per 25 girls and one toilet plus one urinal per 50 boys is required[25]. These toilets should be hygienic, easy to clean and should have convenient hand washing facilities. But in our study only 20 toilets were available during observation for the use of the students.

Hands are the primary vehicle in the transmission of various diseases affecting the whole family[26.] Since scarcity of soap was noticed in our study with agreement to another study done in Mauritius, which in turn acts as a preventive factor among school children in adopting proper hand hygiene practices[27]. Furthermore, school children should be often educated on the importance of hygienic practices in the day to day life.

CONCLUSION

The findings from our study showed a higher number of participated school children had proper hand washing practice behavior. The independent predictors of hand washing practices were family occupation and parent's educational status. Fulfilling the availability of water and soap for hand washing at all the places and all the time can further diminish the percentage of improper hand washing practices among the school going children.

Conflict of Interest: None

Source of fFunding- Self

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DOI Numher: 10.5958/0976-5506.2018.01329.3

The Behavior of Fertile Women in Rural Areas toward the Acetic Acid Visual Inspection

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ABSTRACT

Background: Most patients diagnosed with cervical cancer in Indonesia are at an advanced stage. Therefore, it is important to do early detection of cervical cancer. Maternal and Child Clinic at health clinics in Lampung stated that the coverage of acetic acid visual inspection test was smaller than the target of 10% per year. The purpose of this research was to know the risk factors related to the behavior of women of fertile age in acetic acid visual inspection test.

Method: This research was designed using analytic analysis with a cross-sectional approach. The study population was all fertile women who became the target of acetic acid visual inspection test at a health clinic in Pringsewu Regency, Lampung Province, Indonesia and the multiple logistic regression was employed to examine the relationship.

Results: Results of the test showed that the p-values of knowledge, attitude, family support, perception, and medics support were 0.002, 0.037, 0.037, 0.731, 0.9333 respectively on the behavior of women in a fertile age in acetic acid visual inspection test implying that knowledge variable is the most dominant variable.

Keywords *- Acetic acid visual inspection, behavior, fertile age, risk factors*

INTRODUCTION

Cervical cancer is a malignant tumor that grows inside the cervix or an area of the female reproductive organs. Cervical cancer is characterized by the unusual growth of cells in the cervix [(1)]. The effects of cervical cancer are bleeding, anemia, abortion, and premature partus if suffered by pregnant women, abnormal vaginal discharge, and immune system disorders. It was estimated that there were 528,000 new cases of cervical cancer and 266,000 deaths from cervical cancer. The high incidence of cervical cancer in Indonesia was because most patients diagnosed with cervical cancer were at an advanced stage [(2)]. This becomes a significant reason for the early detection of cervical cancer. The early detection of cervical cancer by acetic acid visual inspection test method in Pringsewu Regency, Lampung Province in 2016 was 169 people (0.2%) from 84,449 women aged 30-50 years with positive results of 17 people (10.1%). In 2015, coverage of early detection of cervical cancer by acetic acid visual inspection test method in Pringsewu Regency, Lampung Province was equal to 158 people (0.19%) from 82,477 women age 30-50 years with positive results equal to 15 people (9.5%). The low participation of women in a fertile period in conducting acetic acid visual inspection test at health clinics in Pringsewu Regency, Lampung Province was due to the low knowledge of fertile women on acetic acid visual inspection test. This was because the majority of mothers are working; thus they were less active to seek for information about acetic acid visual inspection test. The lack of knowledge will affect the attitude of the fertile women who consider the acetic acid visual inspection test less essential to do as well as change the

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perception of fertile women in giving meaning about the importance of acetic acid visual inspection test[3]. The lack of participation in acetic acid visual inspection test is also related to support of medics and family in motivating fertile women to perform acetic acid visual inspection tests. The purpose of this research was to know the risk factors related to the behavior of women of fertile age in acetic acid visual inspection test

METHODOLOGY

This research was a quantitative research type. The design of analytic research with cross-sectional approach was used to find the risk factor analysis related to the behavior of fertile women in acetic acid visual inspection test. The study was conducted in March until August 2017. The research was done at health clinics in Pringsewu Regency, Lampung. The sample size was 361 samples taken by quota sampling [4].

Knowledge data collection tool was a sheet of instrument test. Attitude, perception, and family support data collection tool in this study was a questionnaire that contains 10 questions using a Likert scale. Each question item has 4 alternative answers which were: strongly disagree (1), do not agree (2), agree (3), and strongly agree (4). Medics support data collection tool was questionnaire containing 10 questions which have 2 alternatives "yes" (0) and "no" (1) answers. To get the score 2 option score ranging from 0-1 were employed where score 0 for the response of yes and score 1 for no response. The multivariate test was done using multiple logistic regression tests [5].

RESULTS

Table 1 shows the frequency distribution of the behavior of fertile women in acetic acid visual inspection test. Based on Table 1, it is known that most fertile women did not do the acetic acid visual inspection test.

Table 1: The behavior of fertile women in acetic acid visual inspection test

Variable	Frequency	Percentage%
The behavior of Fertile Women		
Doing acetic acid visual inspection test	97	26.9
Not doing acetic acid visual inspection test	264	73.1
Knowledge Good Less good	 93 268	 25,8 74,2
Attitude		
Positive	127	35.2
Negative	234	64.8
Perception Good Less good	 134 361	 37.1 62.9
Family support		
Good	113	31.3
Poor	248	68.7
Medical support Good Poor	 219 142	 60.7 39.3

Table 2 shows the correlation between the variables and the behavior of fertile women in acetic acid visual inspection test. Based on the results on Table 2, it can be inferred that the p-values of knowledge, attitude, family support, perception, and medics support were 0.002, 0.037, 0.037, 0.731, 0.9333 respectively on the behavior of fertile women in acetic acid visual inspection test. This means that knowledge, attitude, and family support have a significant correlation with the response of fertile women in acetic acid visual inspection test while perception and medics support have no significant relationship. Table 2 also shows that knowledge variable is the most dominant variable related to the behavior of fertile women in acetic acid visual inspection test at the health centers of Pringsewu Regency in 2017 with OR obtained of 2.263.

Table 2: Correlation between the variables and the behavior of fertile women in acetic acid visual inspection test

Variable	Category	Fertile women behavior in doing acetic acid visual inspection test				p-value	Oddity Ratio
		Do the test		Do not do the test			
		n	%	n	%		
Knowledge	Good	37	39.8	56	60.2	0.002	2.263
	Less good	60	22.4	208	77.6		
	Total	97	26.9	264	73.1		
Attitude	Positive	43	33.9	84	66.1	0.037	1.714
	Negative	54	23.1	180	76.9		
	Total	97	26.9	264	73.1		
Perception	Good	38	28.4	96	71.6	0.713	-
	Less good	59	26.0	168	74.0		
	Total	97	26.9	264	73.1		
Family Support	Good	39	34.5	74	65.5	0.037	1.702
	Poor	58	23.4	190	76.6		
	Total	97	26.9	264	73.1		
Medical Support	Good	58	26.5	161	73.5	0.933	-
	Poor	39	27.5	103	72.5		
	Total	97	26.9	264	73.1		

Table 3 shows the interaction test of the predicted model factors. There is no interaction between knowledge variable with attitude variable, and there is no interaction between attitude variable with family support variable (Sig. omnibus = 0.548). Thus, the interaction between knowledge variables with attitude and attitude with family support should be excluded from the model.

Table 3. Interaction test of the predicted model factors

No	Variable	P- value	OR	Sig. omnibus
1	Knowledge	0.028	2.133	0.548
2	Attitude	0.037	1.025	
3	Family Support	0.032	1.156	
4	Knowledge with attitude	0.791	1.153	
5	Attitude with family support	0.214	1.915	

DISCUSSIONS

The result of the research shows that the frequency distribution of the behavior of fertile women in acetic acid visual inspection test is higher in the category of not doing which is 264 people (73,1%). It means that there were more fertile women at Pringsewu Regency who did not perform acetic acid visual inspection test to detect cervical cancer early. The result of the research showed that the respondent behavior the less right category supporting previous research [6]. On the other hands, a study on the description of the action of fertile women on early detection of cervical cancer in the hospitals of Ponorogo City, East Java Indonesia obtained results that respondents behaved positively [7]. According to the researchers, more fertile women in Pringsewu Regency did not do acetic acid visual inspection test because more respondents were less aware of acetic acid visual inspection test, so it affected fertile women behavior not to do acetic acid visual inspection test because they did not know the benefits obtained from acetic acid visual inspection test.

The results obtained that there was no significant relationship between knowledge with early detection of cervical cancer in line with the previous research [8]. Knowledge is the result of knowing and it occurred after people did sensing of a particular object through sight, hearing, smell, taste, and touch. Much of human knowledge is obtained through the eyes and ears [9]. Knowledge is an impression in the human mind as a result of the use of five senses and different from beliefs, superstition, and misinformation [10]. Respondents who have imperfect knowledge about acetic acid visual test will act otherwise to perform acetic acid visual inspection test because the respondents are lack of understanding of the purposes and advantages of the analysis.

There was a relationship between attitude with the behavior of fertile women in the early detection of cervical cancer using the acetic acid method supporting the previous research[11]. The women's positive attitude will form a reasonable view that acetic acid visual inspection test needs to be done to prevent the occurrence of cervical cancer and have a response to decide to do acetic acid visual inspection test.

Perception is the process of recognition of objects (objects, people, ideas, symptoms and events) through the five senses so that it instantly gives meaning and value to an object by highlighting the peculiar nature of an object and the result of perception can in the form of different responses or ratings from individuals [12]. The p-value of understanding was 0.713, which means there was no significant relationship between perception with fertile women behavior in acetic acid visual inspection test. The respondent must recognize the object first, which is acetic acid visual inspection test, from the process of knowing through mass media, printed media, and information from health workers about the benefits of acetic acid visual inspection test. A proper perception of the acetic acid visual inspection test will affect the behavior to perform the analysis and vice versa. Fertile women who have poor understanding will influence the behavior of not doing the acetic acid visual inspection test. However, from the results of the study, more respondents do not know about acetic acid visual inspection test. The inability of respondents in identifying the test causes the respondent to do the test without any good perception of the test.

The family is an external factor that has a relationship or non-material support to others. Types of support can be emotional support, physical support, informational support, and awards or communication support. The existence of the family can provide a significant motivation in patients when patients have various problems of life pattern changes that are so complicated and saturated with all health programs [13]. Based on the results of the research, there was a significant relationship between family support to the behavior of fertile women in acetic acid visual inspection test with the p-value of 0.037. The value of OR was 1.726 which means that respondents with the right category family support have a chance 1.726 times greater to perform acetic acid visual inspection test than respondents with low-income family support category.

Health worker or medics is someone who is responsible for providing health services to individuals, families, and communities. There are two aspects of the quality of health services that need to be done at the health center that is quality of care and quality of service. Quality of care includes technical skills of health workers (doctors, midwives, nurses, or other paramedics) in establishing the diagnosis and providing care to the patient [14]. There is no significant relationship between the support of medics with the behavior of fertile women in acetic acid examination test with the p-value of 0.933. According to the researcher, there was no significant correlation between health officers support and fertile women behavior in doing acetic acid visual inspection test at Pringsewu Regency because health worker has tried as much as possible to support fertile women to perform acetic acid visual inspection test but most of the fertile women still do not do the test. This proved that there was no direct and significant correlation between the support of health workers and the behavior of fertile women in the acetic acid visual inspection test. However, this result is not in line with research about the factors that affect the willingness of fertile women in doing early detection of cervical cancer. The effect of a statistical test using chi-square showed that there was a significant correlation between health officers support (p-value of 0.023) with fertile women willingness in early detection of cervical [15].

CONCLUSION

The knowledge variable is the most dominant variable related to the behavior of fertile women in the acetic acid visual inspection at health centers of Pringsewu Regency with OR value of 2.133. It means that respondents with the first category of knowledge have 2.133 greater opportunities for having behavior in performing acetic acid visual inspection test than respondents with the less right type of expertise. According to the researcher, the knowledge variable was the most dominant variable because fertile women's awareness in the examination of acetic acid visual inspection test did not arise suddenly, but it took time and media in the process of the emergence of such behavior and knowledge was an essential factor. Good knowledge possessed by fertile women will not only affect its behavior but also can affect other individuals because fertile women who already knew the benefit of acetic acid visual inspection test will inform others by doing interaction leading to other fertile women doing acetic acid visual inspection test.

Ethical Clearance: The Ministry of Health Polytechnic approved this research in Tanjung Karang, Indonesia. A research permit was requested from the local health authorities.

Conflict of Interest: Nil.

Source of Funding: The Ministry of Health Polytechnic Tanjung Karang, Indonesia.

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DOI Numher: 10.5958/0976-5506.2018.01330.X

Association of Frequency of Toothbrushing to Periodontal Findings in Elderly Subjects of Dakshina Kannada District

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ABSTRACT

Purpose: The aim of this study was to evaluate the relationship between self-reported toothbrushing frequency to gingivitis and periodontal parameters in a group of elderly males.

Materials and Method: A randomized cross-sectional study of 90 dentate patients aged 60 -75 years old was conducted. The full mouth recording of periodontal pockets and clinical attachment level was done. These periodontal findings indicated the severity of periodontal disease. Data regarding age and toothbrushing habits were collected. Statistical Analysis was done

Conclusion: Brushing twice a day promotes better periodontal health.Hence it very important to educate each and every individual about the advantages of brushing twice daily.

Keywords: *Toothbrushing, periodontal pocket, clinical attachment level, periodontitis.*

INTRODUCTION

Periodontal disease is of multifactorial etiology.The primary causative agent for periodontitis is dental plaque. Thus controlling this pathogenic plaque is necessary to prevent the periodontal disease.[10]Toothbrushing is an essential activity for promotion of oral health and disease prevention.[5]Among the various methods of preventing periodontal diseases in the oral toothbrushing has proved to be the best method .Few systematic reviews found that brushing twice daily is the best method of preventing periodontal disease.[2][6][12]

In India various methods have been used to clean the teeth. It has been common practice in India to use leaves and twigs of plants for cleaning, which is still being practiced by a sizable population.[13] Various organization have been promoting use of toothpaste and toothbrush with recommended frequency. By and large this outreach has been successful. However it has been more effective in younger population.

Periodontal disease in geriatric population is highly prevalent. The reason for this may be varied ,ranging from diminished physical ability to perform the oral oral hygiene habits to age related changes in the periodontium which makes them susceptible for disease.[14] As there are very few studies till date assessing the role of frequency of toothbrushing on periodontal health of elderly ,the present study was designed assess this association.

MATERIALS AND METHOD

This study was conducted in A.B.Shetty Memorial institution of dental sciences after obtaining clearance from ethical committee of the institution. A total of 90 subjects aged between 60-75 years reporting to the outpatient department of A.B.Shetty institute of dental sciences were enrolled in the study after obtaining a written consent.

The inclusion criteria for the study included that the subject should be aged between 60-75 years of age with a minimum of 20 teeth. Any subject with systemic diseases and conditions which can influence periodontal conditions, who have undergone periodontal therapy in previous 6 months or who are taking any medications,

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mouthwashes and nutritional supplements within 3 month period were excluded from the study.

The subjects were asked about their age and toothbrushing habits. The toothbrushing frequency was categorized as follows-

No-Does not brush at all/ uses other cleaning aids like plant twigs or fingers for cleaning the teeth (Group 1)

Once-brush once daily with toothpaste and toothbrush.(Group 2)

Twice-Brush twice daily with toothpaste and toothbrush.(Group 3)

Periodontal pocket depth, clinical attachment level and gingival index were recorded for all the teeth excluding third molars.

Assessment of gingival inflammation

The Gingival Index (GI) as described by Loe H and Silness P in 1963 was recorded.[4]

The scoring criteria was as follows

0- Absence of inflammation/normal gingival,

1- Mild inflammation- slight change in colour, slightedema; no bleeding on Probing,

2- Moderate inflammation- moderate glazing,redness, edema and hypertrophy, bleeding on probing,

3- Severe inflammation- marked redness and hypertrophy ulceration tendency to spontaneous bleeding .

The mean of these scores indicated severity of gingival index.

Assessment of pocket depth:

The pocket depth was recorded by probing six sites per tooth (distobuccal, mid-buccal,mesiobuccal,distlin gual,mid-lingual,mesiolingual),excluding third molars and tooth remnants using Williams graduated probe. The presence of pockets was scored as 0-No deepened pockets,1-atleast 1 pocket 4-5 mm deep and 2-atleast one pocket 6mm and deeper.Of these readings,the highest score described the status of each type of tooth. The mean of these scores indicated the severity of each subject's pocket findings[1]

Assessment of clinical attachment level:

The clinical attachment level was recorded by probing six sites per tooth (distobuccal, mid-buccal,mesiobucca l,distlingual,mid-lingual,mesiolingual),excluding third molars and tooth remnants using William's graduated probe. The presence of clinical attachment loss was scored as 0-No Clinical attachment loss,1-atleast one site with clinical attachment loss of 1-3 mm and 2-atleast one site with clinical attachment loss of 4 mm and deeper.Of these readings,the highest score described the status of each type of tooth.The mean of these scores indicated the severity of each subject's findings

RESULTS

Table 1: Indicators of periodontal findings according to frequency of toothbrushing

Brushing_habit		Mean	Std. Deviation	N
No	Total_mean_pd	.4291	.51432	11
	Total_mean_cal	.7127	.23410	11
	gingival_index	1.4182	.27863	11
Weekly	Total_mean_pd	.4245	.49006	22
	Total_mean_cal	.7505	.17505	22
	gingival_index	1.4545	.25397	22
daily	Total_mean_pd	.2256	.40694	57
	Total_mean_cal	.5900	.15402	57
	gingival_index	1.2825	.21224	57

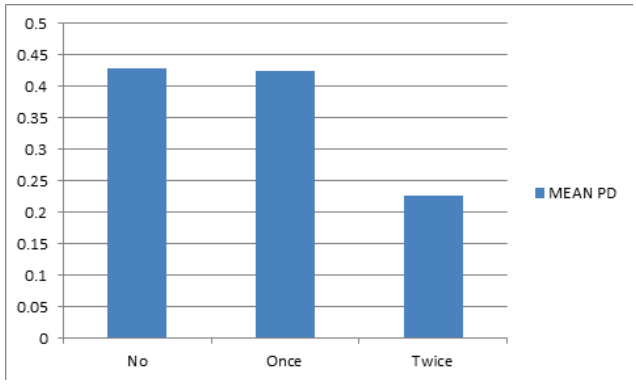

Fig 1:Distribution of Mean pocket depth according to frequency of toothbrushing

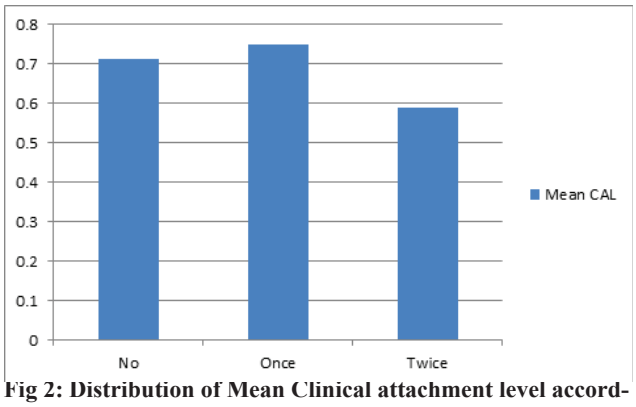

Fig 2: Distribution of Mean Clinical attachment level according to frequency of toothbrushing

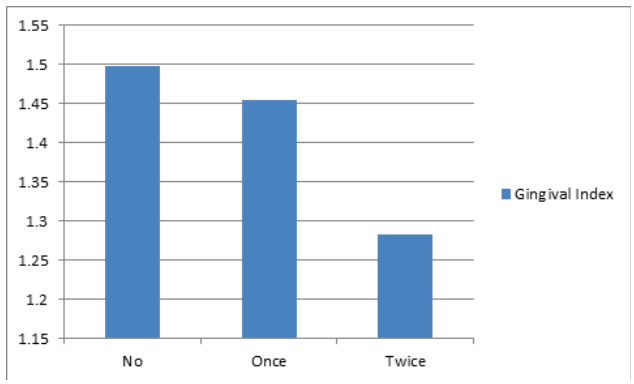

Fig 3: Distribution of Mean Gingival Index according to frequency of toothbrushing

DISCUSSION

The current study subjects were divided into three groups based on the frequency of brushing and were examined for periodontal pocket,clinical attachment level and gingival index.

Out of the 90 subjects,group 1 had 11 subjects(12.22%),group 2 had 22 subjects (24.5%) and group 57 subjects(63.3%).This maybe due to the high level of awareness in the local region regarding the maintenance of oral hygiene.This may also be due to the fact that subjects selected were the patients visiting the dental institution for dental treatment.

The mean score of pocket probing depth in group 1was 0.4291,in group 2 was 0.4245 and in group 3 was 0 .2256

The mean score of clinical attachment loss in group 1was 0.7127 ,in group 2 was 0 .7505 and in group 3 was 0.5900

The mean score of gingival index in group 1was 1.4182,in group 2 was 1.4545 and in group 3 was 1.2825

This clearly shows the positive correlation between frequency of toothbrushing and gingivitis[11] and periodontal pocket [1][3] which is similar to the findings of few other studies . But it also shows negative correlation between increased frequency of tooth brushing i.e (twice daily) and clinical attachment level. This might be because most of the subjects in the present study used hard bristled brush which possibly would have led to recession due to toothbrushing trauma

The limitations of our study is that the sample size is small, and we have not taken into consideration the dexterity of the patient as it is difficult for elderly individuals, to retain the necessary dexterity to accomplish the level of dental plaque control that is required to prevent plaque accumulation.[9]

In the present study the information on toothbrushing behaviour was collected through self-reports.Although dental plaque indices provides better information about oral hygiene, there is evidence of good correlation between self-reported toothbrushing frequency and indices assessing.[8]

CONCLUSION

The findings of this study cannot be generalized as the sample selected for this study is from a very small group of population restricted to a particular geographical area. Consequently the sample in the study can give a reasonable picture of periodontal findings in geriatric population of Dakshina Kannada district. Within the limitation of the current study the it can be concluded that among the present study subjects, brushing twice daily resulted in overall better periodontal health. Awareness of toothbrushing also seems to be high in the present study group.

Source of Funding- Self

Conflict of Interest - Nil

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DOI Numher: 10.5958/0976-5506.2018.01331.1

The Effect of Oxytocin Massage on Changing of Symphysis-Fundal Height (SFH) in Post Normal and Post Caesarean Birth Delivery

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ABSTRACT

Background: Maternal Mortality Rate (MMR) in Indonesia is 81% due to complications during pregnancy and childbirth and 25% during delivery where one of the causes of bleeding is the occurrence of sub uterine involution. This can be prevented by giving oxytocin massage when providing care to normal postpartum mothers and post-cesarean section.

Methods: The population was all postpartum mothers in the midwifery room of Ahmad Yani Hospital, Metro City, Indonesia. Determination of the sample is by accidental sampling technique by including all subjects who meet the sample selection criteria until the number of research subjects is fulfilled, namely 17 exposed groups and 13 not exposed groups. The research instrument used was a questionnaire. Data were analyzed by univariate and bivariate analysis with a statistical test of Chi-square.

Results: The results showed that the proportion of normal uterine fundus in normal postpartum mothers was 64.7% and the post-cesarean section was 61.5%, whereas ordinary postpartum mothers who performed oxytocin massage were 53% and post-cesarean section mothers who completed oxytocin massage were 46.1%.

Conclusion: The oxytocin massage effect on changes in uterine fundus height in ordinary postpartum mothers with p = 0.002 with OR = 4.000 and the oxytocin massage effect on changes in uterine fundus height in post-cesarean mothers with p = 0.016 with OR = 3.500. Midwives are expected to be able to teach mothers how to measure the height of the uterine fundus in the first week using their fingers at home to ensure normal fundus uterine height before delivering babies.

Keywords *- Fundal Height, Oxytocin Massage, Post- Partum, Caesar Section*

INTRODUCTION

Indicators of the ability of a country's health services according to WHO can be seen from the maternal mortality rate during the perinatal, intranasal, and postnatal periods. Specific health targets of sustainable development goals are improving maternal health and reducing to ¾ of the risk of maternal death. In Indonesia, the maternal mortality rate reaches 81% due to complications during pregnancy and childbirth and 25% during the puerperium [(1)].

One of the causes of postpartum hemorrhage is the occurrence of sub uterine involution - a state of permanent or involuntary retardation as the normal process causes the uterus to return to its original shape [(2)]. Further, many in the third day postpartum mothers with Symphysis-Fundal Height (SFH) still one finger below the center, whereas it should have been three fingers below the center. This process is characterized by a slow decline in uterine fundus, a prolonged period

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of discharge and excessive uterine bleeding with severe bleeding. The height of the uterine fundus describes the normal involution process in the middle of the symphysis center in the first week. The method of uterine involution includes the effects of oxytocin, autolysis, and tissue atrophy [3].

Efforts to prevent hemorrhage post partum can be made since the third and fourth stage of labor with oxytocin. This oxytocin hormone plays a role in the process of uterine involution. The involution process will work well if uterine contractions are muscular. Efforts to control the occurrence of bleeding from the placental site by correcting the contraction and retraction of the strong myometrial fibers with oxytocin massage [4].

Oxytocin can be obtained in various ways, either through oral, intra-nasal, intra-muscular or by a massage that stimulates the release of the hormone oxytocin. The effect of oxytocin massage itself can be seen after 6-12 hours of massage. Oxytocin massage is an act of spinal massage ranging from the 5-6 nerves to scapula which will accelerate the work of the parasympathetic nerve to convey commands to the back brain so that oxytocin exits [5].

Based on the data obtained from the General Medical Record of the General Hospital of Jendral Ahmad Yani in Metro City, Indonesia, it was received that the incidence rate of cesarean section was 11.27% of the total deliveries. The results of the preliminary study through interviews conducted at midwives in the hospital midwifery room, they said that they had never done oxytocin massage when giving care to mothers post partum normal and post cesarean section mothers. As such this research aims at the effect of the oxytocin massage on the respective mothers.

METHODOLOGY

This study is a quantitative study with the total number of samples of 30 samples by using accidental sampling. This research was conducted in the Ahmad Yani Hospital Midwifery Metro City from July to October 2016. Analysis of the data in this study employed the Chi-Square test.

RESULTS

Based on the results of data processing, the proportion of changes in uterine fundal height is as follows:

Table 1: Frequency distribution of fundal height

No.	Type of birth delivery	Fundal Height				Total	
		Normal (> 7)		Not Normal (< 7)			
		n	%	n	%	n	%
1.	Normal	11	64.7	6	35.3	17	100
2.	Caesar	8	61.5	5	38. 5	13	100
Total		**19**	**100**	**11**	**100**	30	100

Table 1 shows that post-partum mothers with standard delivery were 6 people (35.3%) with abnormal uterine fundus height, and postnatal mothers with cesarean delivery were 5 people (38 , 5%) with abnormal fundus uteri.

Table 2: Oxytocin massages distribution

No.	Type of birth delivery	Oxytocin Massage				Total	
		Massage		No massage			
		n	%	n	%	n	%
1.	Normal	9	53	8	47	17	100
2.	Caesar	6	46,1	7	53,9	13	100
Total		**15**	**100**	**15**	**100**	**30**	100

Table 2 indicates the normal post-partum mother's given oxytocin massage were 9 people (53%), and the postpartum cesarean given oxytocin massage were 6 people (46.1%). Further, it was found that the mean of fundal height at the first week of post-partum mother given oxytocin massage was 7.13 cm, while the average of fundal height in postnatal mothers the first week who did not undergo oxytocin massage was 8.2 cm.

Table 3: Effect of oxytocin massage to fundal height on normal post-partum mother

Oxytocin Massage	Fundal height					Total	p- value	OR
	Normal (≤ 7)		Abnormal (> 7)					
	n	%	N	%	n	%		
Yes	8	89	1	11	9	100	0.002	4.000 (1.205 -13.283)
No	2	25	6	75	8	100		
Total	10	58.8	7	41.2	17	100		

Statistical test obtained p-value = 0.002 meaning that oxytocin massage affects the changes in the fundal height of ordinary postpartum mothers with the oddity ratio (OR) = 4.000 indicating that the massage has the possibility of 4 times to fundal height.

Table 4: Effect of oxytocin massage to fundal height on cesarean post-partum mother

Oxytocin Massage	Fundal height					Total	p- value	OR
	Normal (≤ 7)		Abnormal (> 7)					
	n	%	N	%	n	%		
Yes	4	66.6	2	33.4	6	100	0.016	3.500 (1.085 -11.292)
No	2	28.6	5	71.4	7	100		
Total	6	46	7	54	13	100		

The table shows p- value = 0.016 indicating that oxytocin massage affects the changes in the fundal height of cesarean post- partum mothers with the oddity ratio (OR) = 3.500 implying that the massage has the possibility of 3.5 times to add the fundal height.

DISCUSSIONS

Based on an analysis of uterine fundus height changes to 30 respondents, of 17 postpartum mothers with standard and non-mass types of labor, 6 people (35.3%) had abnormal uterine fundus height, and from 13 postpartum mothers with cesarean deliveries given no massage was obtained 5 people (38.5%) with abnormal fundus uteri.

Post-partum mothers are said to have experienced a decrease in standard uterine fundus height if after birth the Symphysis-Fundal Height (SFH) is as high as the center, then after the first week, SFH is in the middle of the symphysis center and or 7 cm below the center. The abnormal decline in uterine fundus can cause sub uterine involution, infection and bleeding, therefore monitoring of the involution process must be performed by the midwife by performing height measurements of uterine fundus during the postnatal visit, so that the height of the uterine fundus is standard and abnormalities can be by post-partum mothers [6].

Based on the results of the analysis it was found that the average SFH in 15 mothers who experienced post-partum in the first week was 7.13 cm in line with previous research [7] on the effect of oxytocin massage

on uterine involution in postnatal mothers. The results of the analysis obtained OR of 3.500 meaning that post cesarean mothers who received oxytocin massage had a chance of 3.500 times getting standard uterine fundus size compared to mothers who did not get oxytocin massage. Back massage is an act of spinal massage ranging from the 5-6 to the costa until scapula will accelerate the work of the parasympathetic nerve to deliver commands to the brain back so oxytocin exits. The hormone oxytocin is used to strengthen and regulate uterine contractions, compress blood vessels and help maternal hemostasis, thereby reducing the incidence of uterine agony, especially in prolonged birth delivery [(8)]. Besides, massage therapy has a biological effect that after 2 weeks of massage with a light touch, affects the neuroendocrine which can trigger oxytocin release and can maintain oxytocin stability [(9)].

The results of the research using the test of chi-square generated the p-value of 0.016, (p-value =0.002 <0.05) indicating the effect of oxytocin massage on the decrease of uterine fundus height in ordinary post-partum women. Oddity Ratio of 4.000 means that the regular postpartum mothers who received an oxytocin massage have the opportunity to get 4 times the standard uterine fundus size compared to women who did not get the oxytocin massage. This is in line with the previous research at the Central Java Regional Hospital that oxytocin massage effectively increased the incidence of uterine involution after post-cesarean section, so that a decrease in uterine fundal height could generally run (no more than 7 days) reaching 5-7 cm [(10)]. Oxytocin plays an essential role in the female reproductive cycle. During menstruation, oxytocin is responsible for causing uterine contractions that lead to the release of the placenta and removal from the lining of the uterus. The ability to cause uterine contractions that make oxytocin a very important role during childbirth because these hormones play an essential role in triggering and regulating contractions during labor, but oxytocin release can be inhibited by, for example, acute stress, scale delivery, through mediation of adrenal catecholamine which bind to oxytocin neurons and impede ostosine release [(11)].

The results showed that oxytocin massage can not only be performed on ordinary postpartum women but can be done on post-cesarean women because it can accelerate the decrease in uterine fundus height. In post mother, oxytocin massage can be done and applied , in addition to facilitating the production of breast milk (the process of breastfeeding), reducing the incidence of anemia, and the mother feels quickly recovered and healthy again.

After the surgery, the wound will heal, but there are times when there are many parts of the body that are'injured, and during the healing period there is undue adhesion. Sticking occurs between one wound and another that does not stick perfectly according to the location. This is what causes complaints in the form of pain around the surgical scar. The danger of being imperfectly sticky can be in the way of internal organs such as the intestine, ovary, uterus, and bladder. To get them back to their original position, we need to help by massaging.

Ethical Clearance: The Ministry of Health Polytechnic approved this research in Tanjung Karang, Indonesia.

Conflict of Interest: Nil

Source of Funding: The Ministry of Health Polytechnic Tanjung Karang, Indonesia.

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DOI Numher: 10.5958/0976-5506.2018.01332.3

Study of Association between Calcium and Lipid Profile with Respect To Menopause

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ABSTRACT

Background: Menopause is the time when last and final menstruation occurs. Several studies have observed a higher incidence of CVD and osteoporosis in postmenopausal women compared with premenopausal women. *Aim and objectives:* The study was aimed to estimate serum calcium, lipid profile and to find the correlation of calcium with lipid profile in healthy pre and postmenopausal women working in a tertiary care hospital. *Material and methods:* An observational cross-sectional study was done on 120 subjects between the ages of 30-60 years working in a tertiary care hospital, Karad, Maharashtra from December 2016 to December 2017. They were assigned into premenopausal and postmenopausal group according to the occurrence of menopause. *Results:* In our study we found that an increase in serum calcium correlates with dyslipidemia in both premenopausal and postmenopausal women, but it is statistically significant only in the later group. *Conclusion:* From this study we could conclude that an increase in serum calcium has an adverse effect on the lipid profile in the postmenopausal women. So, we suggest that calcium supplementation should be prescribed vigilantly in postmenopausal women so as to decrease the cardiovascular risk which is already increased owing to the aging process in these women. *Keywords:* Premenopausal women, postmenopausal women, calcium, lipid profile.

INTRODUCTION

The average life expectancy has been increased due to the improvements in medical treatment and increased focus on the preventive health care system. The average age of menopause being around 51 years, we can now expect our women to spend more than a third of their life after menopause. So, medical care specifically directed at postmenopausal women has become an important aspect of modern medicine.[1,2]

Menopause means permanent stoppage of menstruation, which occurs at the end of reproductive life due to loss of ovarian follicular activity. It is the time when last and final menstruation occurs. The hormonal changes occurring during menopause, i.e., decrease in the level of estrogen and increase in the follicle stimulating hormone (FSH) exerts a major effect on the metabolism of lipids, especially lipoproteins. Estrogen has a positive effect on the lipid profile by increasing the HDL (mainly HDL 2) and decreases LDL and total cholesterol.[3]

Calcium is the fifth most common element and also the most abundant mineral in the body. Average adult body contains approximately 1kg, or 25 mol of calcium of which 99% predominantly occurs as extracellular crystals of hydroxyapatite. [Ca_{10} $(PO_4)_6(OH)_2$] The extracellular fluid, i.e., plasma and soft tissues contain rest 1% of remaining body's calcium. [4,5]

Serum calcium is a key regulator in many homeostatic systems and it has diverse functions like maintaining the bone structure, blood coagulation, and nerve muscle contraction, as a second messenger in hormone secretion and in intermediary metabolism. The key components that effectively maintain the narrow range of blood calcium are three hormones- calcitriol, parathyroid hormone (PTH) and calcitonin.[6]

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In spite of calcium supplementation being useful for bone health in children, old age and menopausal women, there is an apprehension about the possible interconnection with occurrence of cardiovascular disease.[7, 8] It can be observed from several studies that there is an association between high serum calcium and cardiovascular disease, metabolic syndrome, insulin resistance and a worst lipid profile.[9-11]

Though the exact cause of this change in the lipid profile is not entirely known, potential mechanism is the basic action of these cations in metabolic pathways.[12]

The objective of our study was to find out the correlation between calcium and lipid profile in pre and postmenopausal women, to check if serum calcium can be considered as a good predictor of lipid abnormality with regards to menopause.

MATERIAL AND METHOD

The current study is an observational type of cross-sectional study. It was conducted from December 2016 to December 2017. The approval letter from institutional ethics committee was obtained. All the subjects who participated in the study were selected randomly considering the inclusion and exclusion criteria, who are working in a tertiary care hospital

Inclusion criteria –120 healthy women between the age group of 30-60 years, out of this 60 were premenopausal and 60 were postmenopausal women. Women were grouped into these two groups based on the history of the menopause occurrence. Menopause has been defined as absence of menses for a consecutive period of 12 months

Exclusion criteria –

Subjects who have not had natural menopause, i.e., surgical menopause or women who are on HRT

Females taking stains, β blockers, calcium or other supplements

Females with any obvious bone or parathyroid pathology or on chemotherapy or radiation therapy.

Before the study, written consent was obtained from all the participants.

Collection of blood sample

About 4ml of blood sample was collected in the morning between 7a.m. and 8a.m. after an overnight fasting by venepuncture of antecubital vein, taking all aseptic precautions in a plain vacutainer. Clear, non-haemolyzed serum was acquired by centrifuging blood at 3000rpm for 10mins.

Estimation of serum levels of calcium and lipids

Estimation of these parameters was done: serum calcium, total cholesterol (TC), triglycerides (TG), high density lipoprotein (HDL), low density lipoprotein (LDL) and very low density lipoprotein (VLDL)

Methods of estimation

Estimation of serum calcium was done by Arsenazo principle. Estimation of TC was done enzymatically by CHOD-PAP method, TG by GPO method and HDL by Trinder's method, LDL by using Friedewald formula and of VLDL by using the formula :VLDL=TG/5

All the above investigations were performed on fully automated EM 360 Transasia autoanalyser by using the same kit. The assays were done on the same day of the collection within 3 hrs.

Statistical analysis

All the results of the above mentioned parameters were initially entered in a excel sheet in a tabular form and the analysis was done with the help of SPSS software version 20, by using unpaired t-test and Pearson correlation.

RESULTS

The study was carried out on 60 premenopausal and 60 postmenopausal women and showed following results: - General examination and systemic examination of all the subjects was normal. Premenopausal women were between the age group 30-50 years with mean age of 39.2 years, while postmenopausal women were between the age group 43-60 years with mean age of 51.63 years.

For comparison of serum calcium in premenopausal and postmenopausal women, unpaired t- test was used, with t-value 3.622 and p-value 0.0004. Difference between the serum calcium levels of premenopausal and postmenopausal women was statistically significant. [refer Table 1]

Table 2 shows the mean and standard deviation of

lipid profile in both premenopausal and postmenopausal women. It shows that TC and TG are high in postmenopausal women while HDL is high in premenopausal women

The correlation table shows that, in premenopausal women all values of chi-square are positively skewed meaning that serum calcium is directly proportional to the lipid profile. But it is not statistically significant. While, in post-menopausal group we have statistically significant positive correlational values except HDL which is inversely proportional. [refer Table 3]

Table 1: Comparison of serum calcium among premenopausal and postmenopausal women.

Serum calcium	**Premenopausal group N=60**	**Postmenopausal group N=60**
Mean	9.405	8.933
Std. Deviation	0.7723	0.6490
Un-paired t-test	3.622	
P-value	0.0004*	

*Significant when $p<0.05$

Table 2: Distribution of lipid profile among premenopausal and postmenopausal women.

Lipid profile	**Premenopausal group**		**Postmenopausal group**	
	Mean	**SD**	**Mean**	**SD**
TC	172.23	27.36	195.1	36.29
Log_{10} TG	1.97	0.15	2.0	0.19
HDL	53.27	8.90	44.5	10.21
VLDL	20.05	7.14	24.4	10.52
LDL	98.92	22.45	124.6	38.66
LDL/HDL	1.91	0.51	1.9	0.54

Table 3: Correlation between serum calcium and lipid profile among premenopausal and postmenopausal women.

Characteristics of lipid profile	**Serum Calcium**			
	Premenopausal group		**Postmenopausal group**	
	Pearson Correlation ®	**Sig. (2-tailed)**	**Pearson Correlation ®**	**Sig. (2-tailed)**
TC	0.021	0.876	0.651	< 0.0001**
Log_{10} TG	0.133	0.312	0.276	0.033**
HDL	0.069	0.598	-0.235*	0.070
VLDL	0.129	0.326	0.295	0.022**
LDL	0.043*	0.742	0.562	< 0.0001**
LDL/HDL	0.010*	0.940	0.178	0.174

***Significant when P<0.05 *represents negative correlation*

DISCUSSION

Among postmenopausal women, coronary artery disease (CAD) is one of the leading cause of death. In fact, there is four to eight times more risk of death due to CAD than any other disease in these women.[13] Increased cholesterol is a crucial factor in the pathogenesis of atherosclerotic disease.[5] In our study the mean age in premenopausal women is 39.2 years, while that of postmenopausal women is 51.63 years. The mean age in postmenopausal group is greater than that of premenopausal women. It is difficult to avoid this difference in the age group as it is not possible to design a study that can eliminate the effects of normal aging process from that of natural menopause.[14]

In our study, we observed an increase in levels of TC, TG and LDL. These changes in lipid profile can be attributed to the decreased level of estrogen in postmenopausal women. Also we observed a decrease in HDL in postmenopausal women when compared to premenopausal women, suggesting the protective role of estrogen in premenopausal women. Similar results are observed in several studies.[14,15]

Estrogen increases HDL by various mechanisms, which mainly includes hepatic production of apolipoprotein A and decreased hepatic elimination of HDL2 by reducing the activity of hepatic lipase.[16,17] As the estrogen level is low in the postmenopausal period, all these actions of estrogen are hindered resulting in increase in TC and LDL level and decreased HDL.

The main finding in our study was a direct association between calcium and TC, TG and LDL in the entire study population. No significant association was found between calcium and lipid profile in the premenopausal women. In postmenopausal women, with increase in serum calcium, significant increase in TC, TG and LDL was observed. But, a significant inverse relationship between calcium and HDL was seen.

On the basis of these results we can conclude that there is a significant and direct relationship between serum calcium and lipid. It also suggests that, estrogens might be playing a crucial role in counteracting the undesirable effect of serum calcium on lipid profile in the premenopausal women.

Various mechanisms are involved in the relationship between calcium, lipids and estrogen. Some researchers have documented that calcium supplementation might be increasing the endogenous serum triglyceride by decreasing the hepatic catabolism of cholesterol in estrogen deficient states.[18] during normal states; estrogen is found to increase cholesterol catabolism in liver by activating the LDL receptor.[19] Contrary to that, calcium is found to decrease cholesterol catabolism leading to an increase in lipid synthesis. This action of calcium can be explained by decrease in the activity of 7α-hydroxylase, an enzyme involved in cholesterol catabolism and stimulation of Sterol Regulatory Element Binding Protein (SREBP)-1c expression which is a transcription factor in de-novo synthesis of lipids.[20]

Decrease in the amount of physical activity also plays an important role in the alteration of lipid profile in the postmenopausal women. During exercise TG stored in adipose tissue is hydrolyzed to free fatty acids which are the main source of energy.[21] Exercise also increases lipoprotein lipase activity in the lining of capillary endothelium. Thus, it decreases the levels of TC, TG and VLDL while reduced physical activity in postmenopause increases this levels.[17]

Based on these evidences, we observed that the combination of lack of estrogen and physical exercise and comparative higher calcium levels might be adversely affecting the lipid profile and as a consequence individual cardiovascular risk. Our results suggest that, postmenopausal women have unfavorable lipid profile in terms of increased TC, TG, LDL and decrease in HDL levels.

CONCLUSION

The results of our study show a significant correlation between serum calcium and TC, TG, LDL & HDL in the postmenopausal women. These findings indicate that, calcium supplementation should be done with great care, at least in the postmenopausal women by closely monitoring the lipid profile.

Limitation

Small sample size is a limitation of our study. Also, along with lipid profile, estimation of apolipoproteins could have given a better idea about the effect of menopause. Also, being an observational study, causal association cannot be explained emphatically.

Acknowledgement: We are grateful to KIMSDU, Karad, Maharashtra, for funding this research project

Conflict of Interests: The authors declare that there is no conflict of interests regarding the publication of this paper

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DOI Numher: 10.5958/0976-5506.2018.01333.5

Development of Empowerment Model of People with Mental Health Disorders in Community and Prison, to Improve Productivity and Quality of Life, in Indonesia

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ABSTRACT

Introduction : Empowerment is a key component of restoration and need to be assessed in remedies in addition to more conventional outcome measures of symptoms and functioning, empowerment might be a treatment aim in schizophrenia and impartial residing abilities as well as perceived social aid may be the mediating elements.

Material/Method: Literature review through brief review models.

Finding: Many variables influencing quality of life (QOL) for outpatients with schizophrenia were identified from prior research. Symptom severity, psycho- social rehabilitation activities, and empowerment have all been absolutely recognized as key variables

Discuss: Each incorporating empowerment and advocacy primarily based interventions into recuperation oriented services and presenting community-based, individual-targeted services to people based on individually defined desires are essential guidelines for future recuperation-oriented efforts

Conclusion: The problem of care or care giver of people with mental disorder in Indonesia is still very complex, there are some things expressed by the ministry of health republic Indonesia, the problem of resources in the maintenance, the distribution of human resources still accumulate in large cities, health facilities to treat patients with mental disorders are still very low, stigma and discrimination from family and society, and the percentage of financing of patient care with low mental disorder

***Keyword** : Empowerment model, schizophrenia, prison, problem on mental health in community*

INTRODUCTION

Empowerment is a key component of restoration and need to be assessed in remedies in addition to more conventional outcome measures of symptoms and functioning (1), empowerment might be a treatment aim in schizophrenia and impartial residing abilities as well as perceived social aid may be the mediating elements (2). Epidemiological research performed with prisoners in numerous international locations have proven a high occurrence of psychiatric morbidity (3). People with a records of mental disease revel in mainly poor results following launch from prison that are not absolutely explained by pre-existing downside, evidence-based transitional empowerment for prisoners with a records of mental health problem should be supplied at a stage commensurate with need (4). In an influential record in England and Wales, the workplace of countrywide facts was observed that 7–14% of prisoners had a practical psychotic ailment, 50–78% had character sickness and 40–seventy six% suffered from depression, obsessive-compulsive disorder or an anxiety-related disorder (5).

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Mental health problem arise at high fees in all countries of the sector (6). An expected 450 million human beings global wide be afflicted by mental or behavioral problems (7). those problems are specially regularly occurring in prison populations. The disproportionately high charge of mental problems in prisons is related to several factors: the considerable misconception that anyone with mental problems are a chance to the general public; the general intolerance of many societies to difficult or disturbing behavior; the failure to promote treatment, care and rehabilitation, and, certainly, the lack of, or negative get entry to, intellectual fitness offerings in many nations. many of those problems can be gift before admission to prison, and can be in addition exacerbated by the strain of imprisonment. but, mental disorders may additionally expand throughout imprisonment itself as a consequence of winning conditions and additionally possibly due to torture or different human rights violations (8).

Four out of each ten people stricken by mental issues which include schizophrenia, depression, intellectual disability, alcohol use disorders, epilepsy, and those committing suicide are living in low- and middle-profits nations, mental and substance abuse problems are critical causes of ailment burden, accounting for eight.8% and sixteen.6% of the full burden of disorder in low-income and decrease middle-earnings countries, respectively (6).

Humans with mental problems, such as schizophrenia, bipolar disease and despair are some distance more likely than the overall populace to die due to their untreated mental or bodily health issues, reviews from a number international locations suggest that incarcerated individuals are much more likely to be suffering from mental illness and substance abuse disorders than people outside of prisons and jails (4).

DISCUSSION

Many variables influencing quality of life (QOL) for outpatients with schizophrenia were identified from prior research. Symptom severity, psycho- social rehabilitation activities, and empowerment have all been absolutely recognized as key variables(9), Following a recuperation technique in mental health services by focusing on the improvement of the social community, stigma discount and particularly on the development of private power has the potential to lessen depression in patients with psychosis and enhancing their QOL(10). It is essential that provider vendors and directors make extra efforts to eliminate or reduce self-stigma and unmet restoration wishes, that are associated with the betterment of the general high-quality of life and lengthy-time period restoration(11). Each incorporating empowerment and advocacy primarily based interventions into recuperation oriented services and presenting community-based, individual-targeted services to people based on individually defined desires are essential guidelines for future recuperation-oriented efforts(12).

Divert human beings with intellectual issues closer to the mental health system: Prisons are the incorrect place for lots people in need of mental health treatment, because the crook justice gadget emphasizes deterrence and punishment in preference to treatment and care(13) (7). Regulation provide prisoners with access to appropriate mental health treatment and care: access to assessment, treatment, and (while important) referral of humans with mental problems, along with substance abuse, have to be an quintessential a part of fashionable health offerings to be had to all prisoners(14). Offer get right of entry to acute mental health care in psychiatric wards of general hospitals: while prisoners require acute care they ought to be temporarily transferred to psychiatric wards of fashionable hospitals with appropriate safety tiers.(15)(7). Encourage inter-sectoral collaboration: Many problems and troubles can be solved with the aid of bringing relevant Ministries and different actors collectively to discuss the wishes of prisoners with mental health issues(5).

CONCLUSSION

Mental health problem in Indonesia are very complex that WHO data shows an estimated 24 million people living with schizophrenia(16), data from the Ministry of Health Indonesia approximately 1 million (1.7 people per mil) diagnosed with schizophrenia(17), where health facilities and care of people with mental disorders in Indonesia according to the health department of Indonesia republic survey still not meet the good ratio between patients and facilities throughout the region in Indonesia (18).

The problem of care or care giver of people with mental disorder in Indonesia is still very complex, there are some things expressed by the ministry of

health republic Indonesia, the problem of resources in the maintenance, the distribution of human resources still accumulate in large cities, health facilities to treat patients with mental disorders are still very low, stigma and discrimination from family and society, and the percentage of financing of patient care with low mental disorder(17), and uneven distribution of psychologists, nurses, doctors, care giver at mental health centers and health center in the prisons throughout Indonesia(16).

Conflict of Interest : Nil

Source of Funding : Self funding

Ethical Clearance: None

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DOI Numher: 10.5958/0976-5506.2018.01334.7

Management of an Unusual Midline Diastema with a Fixed Appliance: A Case Report

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ABSTRACT

This is the case of a 12 year old, male child who reported with a 9mm midline diastema due to two mesiodens. The diastema was unusual as the central incisors were displaced unequally from the midline. Tooth 21 and 22 were displaced more distally from the midline leaving inadequate space for eruption of tooth 23. The challenge in this case was to close this unequal diastema. Thus the conventional fixed appliance which relies on reciprocal anchorage could not be used to close the diastema. Hence the fixed appliance was modified by using a Nance palatal arch with a labial wire extension to close this unequal diastema. The presentation discusses this unusual presentation of diastema and the modified fixed appliance used to treat the case.

Clinical Relevance: This case report explains the biomechanics during midline diastema closure where the space is unequally distributed across the midline.

Keywords: *Diastema, Mesiodens, Incisors*

INTRODUCTION

The maxillary midline diastema, because of its esthetic importance causes a lot of concern among the parents and the child [1]. The etiology could be both environmental and genetic [2]. According to Moyer's [3], the causes of a maxillary midline diastema could be many. Imperfect fusion of the premaxilla at the midline, enlarged upper labial frenum, the diastema being part of the normal growth, congenitally missing lateral incisors, midline supernumerary teeth ,small size of teeth relative to the jaw size are the common causes enlisted. The treatment plan for a maxillary midline diastema must take into consideration the causative factors of the diastema and the retention plan to prevent relapse.

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Maxillary midline diastemas exceeding 2mm are unlikely to close spontaneously following eruption of canines and are indicated for early closure[4]. This is especially true in cases of large unaesthetic diastemas or where the position of the central incisors will inhibit the normal eruption of the lateral incisors or canines[5]. In large diastemas, it is important to close the diastemas with bodily orthodontic movements rather than tipping movements. Tipping movements also tend to result in more relapse[6].

This is a case report of the management of large, midline diastema caused by the unequal displacement of the central incisors. The biomechanics involved in the orthodontic closure of this unusual diastema is explained in this case report.

CASE REPORT

A 12 year old was brought by his parents to our clinic with a chief complaint of a large unaesthetic space in the upper front region. The child was concerned regarding the unaesthetic appearance in the upper front region. The medical history was insignificant. Intraoral examination revealed a class 1 malocclusion. 2 midline

supernumerary teeth (Mesiodens) were causing the diastema. The diastema was approximately 9 mm. Tooth 11 was displaced labially with a 4 mm overjet ,but was closer to the midline compared to 21 which was displaced distally 7mm approximately by the 2 mesiodens causing the unequal diastema. (Figure 1: A, B, C).The other teeth present in the upper arch were 16, 15, 14, 53, 12, 22, 24, 25, 26. There was no space present in the arch for the eruption of tooth 23. OPG revealed the presence of unerupted permanent canines (Figure 2). There were no other supernumerary teeth or any other abnormality seen on the OPG. No abnormality was detected with the maxillary frenal attachment.

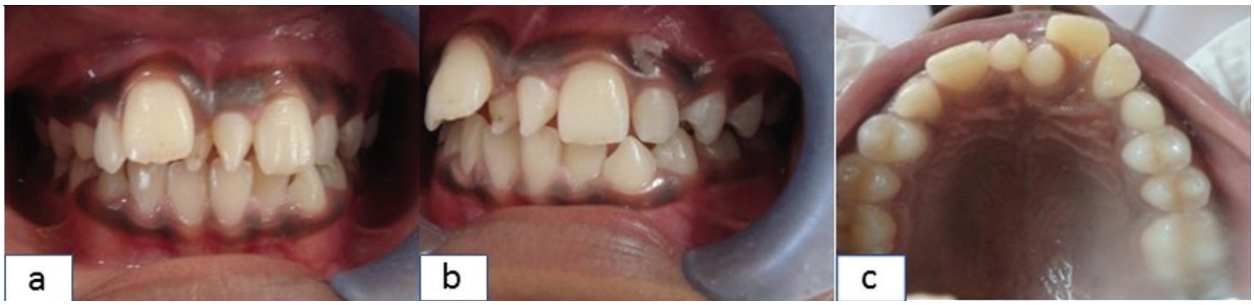

Figure 1: Pre- operative photograph

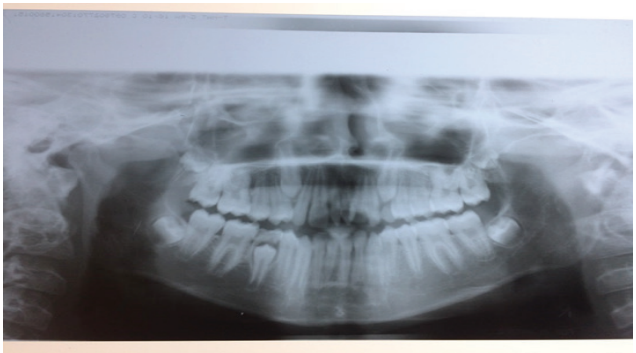

Figure 2: Orthopantamograph

The two supernumerary teeth were extracted under local anesthesia. Tooth 53 exfoliated normally. The first molars were banded and other erupted teeth were bonded as part of the sectional fixed appliance. In the first stage, initial levelling and alignment was done with 014 inch round NiTi for a month to reduce the proclination of 11. (Figure 3).

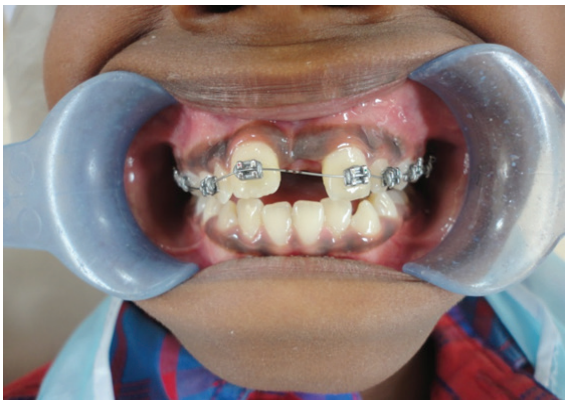

Figure 3: Initial alignment

In the 2nd stage after a month, the diastema closure was initiated. The arch wire used was 020 inch round stainless steel. Teeth 16 to 11 were consolidated into a single segment with a figure of 8 ligature wire. Similarly, teeth 24 to 26 were consolidated as a single segment. A Nance palatal arch with a labial projection with a hook extending to the midline of the arch was fabricated to pull the teeth 21 and 22 towards the midline. The teeth 21 and 22 were engaged with an e chain to the hook on the wire extension and consolidated separately as a single segment to mesialise the two teeth. (Figure 4A, B)

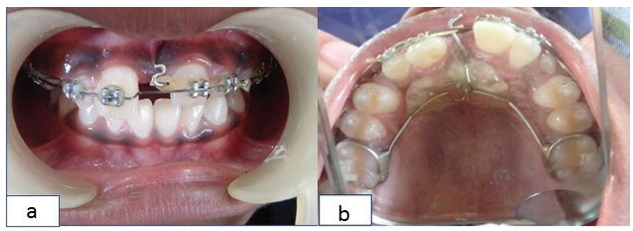

Figure 4: Modified fixed appliance

Over a period of 2 months, the teeth 21 and 22 were mesialised 5mm gradually towards the wire extension. At this stage about 4mm of diastema remained with 2mm distributed on either side. At this stage, the Nance palatal arch with extension was removed. The 4 incisors were engaged with the elastic chain to close the diastema using reciprocal anchorage. (Figure 5) The diastema closure was achieved over a period of 6 months .The case is under follow up to derotate tooth 24 to create space for the unerupted 23.(Figure 6 A,B)

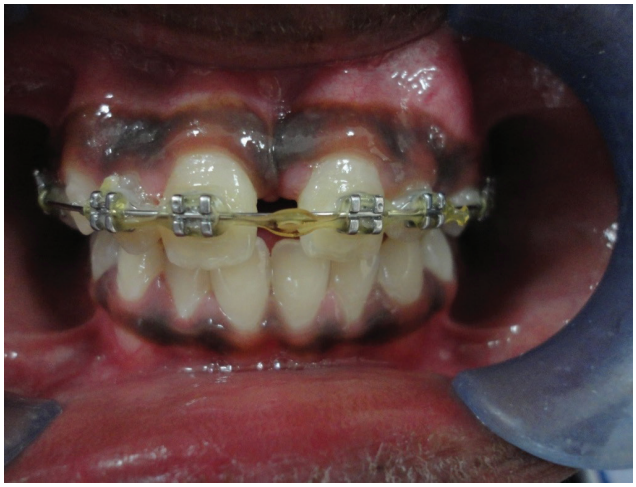

Figure 5: Post Nance Palatal Arch Removal

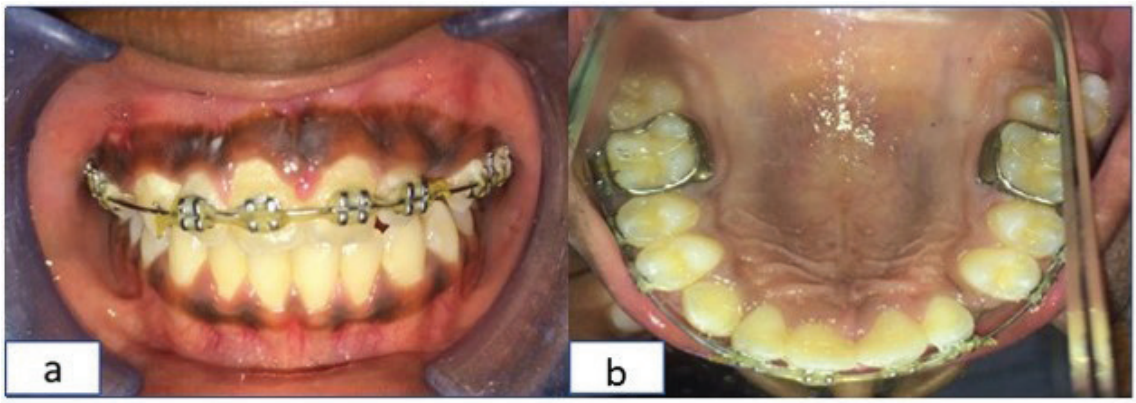

Figure 6: Diastema closure

DISCUSSION

Midline diastema as described by Angle, is a common form of incomplete occlusion characterized by a space between the maxillary and, less frequently, mandibular central incisors[7]. A midline diastema is commonly seen in the mixed dentition[8]. It could be part of the normal growth as in an ugly duckling stage or it could be due to other factors such as supernumerary teeth causing displacement and requiring early intervention. The presence of supernumerary teeth (Mesiodens) cause a variety of pathological disturbances the most common of which is a diastema[9]. According to Kokich *et al*.[10], diastema was perceived as unattractive by laypeople when the distance between the central incisors was more than 2mm. The cause for diastema in the present case was due to the presence of two mesiodens. The treatment of large diastemas are very often for esthetic and psychological than for functional reasons. In addition to the esthetic concerns, this case required early intervention to prevent potential traumatic injury to tooth 11 which was labially placed. Also there was inadequate space for the eruption of tooth 23.

According to Russel and Folwarczna, mesiodens should be extracted in the early mixed dentition period which will enhance better alignment of teeth thus minimizing the need for orthodontic treatment. Mitchell and Bennett have suggested that in cases of completed root formation in adjacent permanent incisors, mesiodens extraction can be carried out later and in permanent dentition period, line of treatment is extraction of mesiodens followed by fixed orthodontic appliances for diastema closure[11].

Some of the common methods used to treat midline diastemas are using removable and fixed appliances, elastics, composite build ups etc. Removable appliances cause only tipping movements and hence not indicated here. Elastics have the potential to slip subgingival and can damage the periodontium[12]. Composites can be used to close small diastemas but not in cases of large diastemas. Large diastemas described in this case report require fixed appliances to cause controlled bodily

movement.

The challenge in this case was to close the diastema by initially moving only the teeth 21 and 22 without moving tooth 11. Thus a conventional fixed appliance which would make use of reciprocal anchorage to close the diastema could not be used. A modified appliance combining fixed appliance therapy with a Nance palatal arch was designed to fulfill the objectives of the treatment.

According to Sullivan et al[13], relapse occurs in almost 34% of the cases and thus retention with a bonded palatal retainer is indicated long term or even for life. The present case is under follow up in order to obtain an ideal outcome that is to create space for the eruption of 23 thereby converting it into a non-extraction case.

CONCLUSION

Midline diastema is a common occurrence in the mixed dentition. Though many modes of treatment for midline diastema are available, the treatment plan must be individualized and the appliance must be modified depending on the presenting clinical situation.

Conflict of Interest: Authors have no conflict of interest.

Source of Funding: Self-funded.

Ethical Clearance: The present case report has been approved by institutional ethics committee.

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DOI Numher: 10.5958/0976-5506.2018.01335.9

Comparative Study on Overweight and Obesity among School Going Adolescent boys in Small Town and Metropolitan City of West Bengal

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ABSTRACT

Background- Childhood and adolescent obesity is one of the most serious public health challenges of the 21st century. The problem is global and is affecting many low and middle-income countries , particularly in urban settings. The most importance significance is persistence of obesity into

adult-hood with all the associated health risks.

Materials and Method: It is the observational, cross-sectional and comparative study and a total of 1200 boy students, 600 from one government and one private school of metropolitan city of Kolkata and 600 from a government and a private school of rural town of Midnapore district of West-Bengal were enrolled. In our study BMI was calculated from weight and height, and cut off of 23 and 27 were taken for overweight and obesity respectively. It is observed that 16.3% and4% boys from Midnapore town were overweight and obese respectively. In Kolkata city 18.3% and 6% boys were overweight and obese respectively. Statistically significant (P<.0001) difference is found in the BMI of boys from Midnapore town and Kolkata city.

Conclusion : It is seen that children from cities and those belonging to higher socio-economic groups with less outdoor activities and consuming fast food were more likely to be overweight and obese than the boys from small town areas. These factors should be addressed and necessary measures should be taken to reduce the incidence of obesity especially in urban setting.

Keywords- *Overweight, obesity, BMI, adolescent boys, Metopolitan,Town*

INTRODUCTION

The World Health Organization has described obesity as one of the most neglected public health problems .Along with increase in adult obesity, the proportions of children and adolescents who are overweight and obese have also been increasing. The basic reasons behind the rising trend in obesity is due to shift in the diet towards increase intake of energy-dense food that are high in fats and carbohydrates but low in minerals, vitamins and other healthy micronutrients. The increasing trend towards decreased levels of physical activity adds to the increasing problem. The impact of such risk factors are moderated by factors such as age and gender. Family characteristics, parenting style and parent's lifestyles also plays a major role. Environmental factors such as school policies, demographics, and parent's work related demands further influence eating and activity behaviours. Genetics are one of the biggest factors as the cause of obesity. In our study we wanted to compare the prevalence of over-weight and obesity among the metropolitan city and small town settings.

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MATERIALS AND METHOD

This present study is observational, cross-sectional, questionnaire- based study done between February 2018 to July 2018. One private and one government boy's school of Kolkata Metropolitan city comprising of 600 students and a private and a government boy's school of small town of Midnapore district comprising of 600 students participated in our study. These children were between age 10 to 16, from class 5th to 11th standard. The children were selected by systemic random sampling. Prior intimation and consent was taken from the school authorities and consent was taken from all the students under study. There is no conflict of interest in our study. A standardized questionnaire was provided to all eligible candidates and each candidate was explained every question in detail. Height was measured(to the nearest 0.1 cm) with the subject standing in an erect position against the vertical scale with head, shoulders, buttocks and heels touching the flat surface(wall) as per CDC guidelines. Body weight was measured(to the nearest 0.1 kg) with the subject standing motionless on the weigh machine with feet 15 cm apart and weigh distributed equally on both legs.

Body mass index (BMI) was calculated as weight in kg/height in metre². Overweight and obesity was calculated by BMI for age. To define overweight and obesity in children, adult equivalent of 23 and 27 cut-offs presented in BMI chart was used. Overweight is also defined as a BMI above the 85th percentile and below 95th percentile for children and teens of same sex and age. Obesity is defined as BMI at or above the 95th percentile for children and teens of the same sex and age.

RESULTS

TABLE 1: Prevalence of overweight and obesity in different age groups in Midnapore Town

Age group	No of Students	Overweight	Obese
10-11	89	12(14%)	2 (2.4%)
11-12	106	16 (15.4%)	5 (4.5%)
12-13	94	14 (15%)	3 (3.5%)
13-14	112	17 (15.6%)	5 (4.8%)
14-15	98	18 (18.4%)	4 (4.4%)
15-16	101	21(20.6%)	5 (5.2%)

TABLE 2: Prevalence of overweight and obesity in different age groups in Kolkata City

Age group	No of Students	Overweight	Obesity
10-11	80	13(16.2%)	3 (3.7%)
11-12	102	17 (16.6%)	6 (5.8%)
12-13	104	18 (17.4%)	7(6.7%)
13-14	96	18 (18.4%)	5 (5.2%)
14-15	112	21 (19.2%)	7 (6.2%)
15-16	110	23 (21.2%)	8 (7.2%)

TABLE 3: Comparison of overweight and obesity between Midnapore Town and Kolkata City

	OVERWEIGHT		OBESITY	
	Mean	SD	Mean	SD
Midnapore Town	16.3	2.86	4	1.15
Kolkata city	18.3	3.14	6	1.63
P value	<.0001		<.0001	

In the present study overweight and obesity in Midnapore town was found to be 16.3% and 4% respectively whereas in Kolkata metropolitan city overweight was 18.3% and obesity was 6 % respectively. We have found significant difference (P value <.0001) for both overweight and obesity while comparing both group from small town and Kolkata city. To determine the factors responsible for this statistically significance of the higher prevalence of overweight and obesity children in the Kolkata city group, analysis of distribution of the socio-economic factors, levels of physical activities and eating habits of children were assessed. These two groups showed statistic significance in terms of family income, visit to restaurants, intake of junk food, physical training carried out in schools and the means of transport to and fro from the school. The city children used vehicles like pool cars, bus for mode of travel whereas the town students mainly walked to school and used bicycle.

DISCUSSION

Bharati et al.[1] reported prevalence of overweight and obesity to be 3.1% and 1.2% respectively, Sethi and Kapoor reported prevalence of overweight and obesity to be 13.4% and 7.8% respectively from Delhi. Deshmukh et al. reported overweight/obesity to be 2.2% in rural areas of Wardha district. Reviewing the previous studies conducted in small town like Bankura in West Bengal district (Gupta et al 1984) was 7.7% overweight and 4.4% obese.. Harish Ranjani et al.[2] in 2010 combined 19.3% of childhood overweight and obesity which was a significant increase from the earlier prevalence of 16.3% in 2001 and 2005. Study conducted by Jain S, Pant B, Chopra H, Tiwari R [3], it was seen 18.4% overweight and 10.2% obese respectively among adolescents of affluent public schools in Meerut.Bulbul & Hoque [4] performed a similar study on childhood obesity in Bangladesh in 2009 where they included children between age 6-15 years in both rural and urban areas. They found that both in urban and rural areas 3.5% were obese, 9.5% were overweight. Zhang YX, et al.[5] observed remarkable increase in overweight and obesity in urban adolescent from 1985 to 2010. Ramachandran A et al.[6] highlighted high prevalence of overweight (17.8%) in adolescent boys in urban India. [7]Genetic predisposition to obesity is well established (Lyon & Hirschhorn,2005) and genes that influence obesity is like to be associated with BMI(Haworth et al,2008).

Pathak S et al.[8] found obesity and overweight was highly prevalent in urban adolescents than rural adolescent males. Arnab Ghosh[9] observed that prevalence of overweight and obesity among adolescent is not restricted to any particular habitat and early intervention is required to check this global epidemic. The study conducted by Goyal RK et al[10] and Kotian et al also indicated higher prevalence of overweight and obesity of children of higher and middle socio-economic income groups.

There were some limitations of our study as the lifestyle of most students were recorded, based on the recall of their activities which might not be that accurate. This study did not involve the family for the nutritional assessment and and furthermore these type of studies should involve more participants from more schools.

CONCLUSION

The study showed that:

- There has been an overall rise in case of overweight and obesity in young adolescent boys and in younger generations irrespective of type of urban and semi-urban areas.
- There is significant increase in overweight and obesity in adolescent boys in metropolitan city than in small town.
- The higher standard students showed more incidence of increase in overweight students in both in Midnapore and Kolkata showing dangerous trend of non-healthy population growth in future.
- There is emergent need for national health measure to put a stop in this preventable public health disease by starting national health and nutritional evaluation programmes, yoga and out-door activities in school curriculum.

Ethical Clearance- Taken from Ethical committee of our Institution (CSS College of Obs,Gyne and Child Health)

Source of Funding- Self

Conflict of Interest- Nil

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DOI Numher: 10.5958/0976-5506.2018.01336.0

Effects of Mode of Delivery on Cord Blood Thyroid Stimulating Hormone

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ABSTRACT

Background: Congenital hypothyroidism (CH) is a very common congenital endocrine disorder. In most cases, CH is permanent and results from an abnormality in thyroid gland development (dysgenenesis or agenesis) or a defect in thyroid hormone synthesis. Thyroid function is dynamic during the prenatal period with many factors like gestational age, mode of delivery, birth weight and the day of sample collection.

Aim & Objective: To find out mode of delivery on TSH cord blood. **Materials and Method:** A cross-sectional study of neonates born in KIMS Hospital Karad from December 2013 to February 2015 was done. Blood samples were collected from the cord at birth and 24 hours sample collected from peripheral veins while observing all safety and aseptic precautions. **Statistical Analysis:** Student t test (two tailed, independent) was used to find the significance of study parameters on continuous scale between two groups (Inter group analysis) on metric parameters.**Results:** The mean value of TSH (miu/dl) in the neonates was 2.77±0.46 (mean±SD).**Conclusion:** Mode of delivery need not be taken into account when TSH values, in samples collected at birth in term neonates.

Keywords: *Thyroid Stimulating Hormone, Mode of Delivery.*

INTRODUCTION

Thyroid hormone (TH) concentration is low in the fetus during the first half of pregnancy. During this time, the fetus is entirely depending on maternal TH. The fetal hypothalamic-pituitary-thyroid axis begins to function by mid-gestation and is mature in the term infant at delivery.[1]The critical role of thyroid hormones in CNS maturation has long been recognized. Thyroid hormones primarily affect neuronal differentiation and synaptogenesis.[2] Thyroid function is dynamic during the prenatal period with many factors potentially influencing neonatal TSH and thyroid hormone levels. Various factors like gestational age, mode of delivery, birth weight and the day of sample collection may influence measured TSH levels in a screening programs.[3] The effect of these factors is not clearly defined as some studies state that neonates delivered by Caesarean section are significantly more likely to have TSH levels higher than those born by vaginal delivery [3,4] , while others have reported higher blood TSH concentration in neonates born vaginally.[5-8] Nevertheless some studies which document that neonatal thyroid function is unaffected by mode of delivery.[9,10]

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MATERIALS AND METHOD

Study Design: A cross-sectional study of neonates born in KIMS Hospital Karad from Dec 2013 to February 2015 was done. Blood samples were collected from the cord at birth and 24 hours sample collected from peripheral veins while observing all safety and aseptic precautions.Blood samples were analyzed

for TSH by using Lumax machine, based on Chemi-Luminescence Immuno-Assay (CLIA) technique. A total of 462 samples were collected included in the study. Descriptive statistics with respect to TSH values and age, birth weight, mode of delivery were studied. Neonates were divided into groups on the basis of their birth weight and mode of delivery. The relationship of TSH with mode of delivery was evaluated statistically.

Statistical Methods & Analysis:

Descriptive statistical analysis was carried out in this study. Results on continuous measurements are presented as Mean ± SD (Min- Max) and results on categorical measurements are presented in Number (%). Significance was assessed at 5 % level of significance. Student t test (two tailed, independent) was used to find the significance of study parameters on continuous scale between two groups (Inter group analysis) on metric parameters. SPSS (Statistical Packages for Social Sciences) 20.0 software was used for the data and Ms-Excel have been used to generate graphs, tables etc.

RESULTS

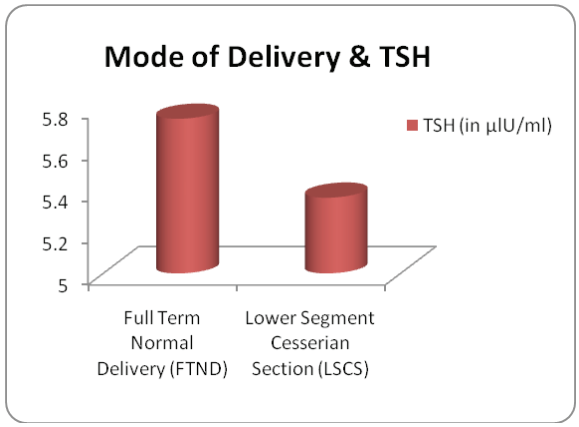
In this study 462 neonates were included based on inclusion and exclusion criteria. Samples for TSH were collected at birth. Of all the babies, 234 were born through full term normal vaginal delivery while 228 were born through caesarean section. (Table 1).TSH in the samples was measured using CLIA. The mean value of TSH (miu/dl) in the neonates was 2.77 ±0.46 (mean ± S.D) (refer Table 1)

Table 1: Showing the Mode of Delivery and Levels of TSH.

Mode of Delivery		TSH (in µIU/ml)
FTND	N	234
	Minimum	.40
	Maximum	19.50
	Mean	5.7428
	Std. Deviation	2.64686
LSCS	N	228
	Minimum	1.50
	Maximum	17.20
	Mean	5.3636
	Std. Deviation	1.96524
Statistical Analysis	Unpaired 't' test value	1.745
	p value	0.082

FTND -Full Term Normal Delivery

LSCS -Lower Segment Caesarean Section



DISCUSSION

In our study the mean TSH value (µIU/ml) in neonates born by full term normal delivery (FTND) was 5.74 ± 2.64 (mean ± S.D) and mean TSH value (µIU/ml) in neonates born by caesarean section (LSCS) was 5.36 ±1.96 (mean ± S.D) with a p value of 0.082 (Table 1) which is not statistically significant indicating that neonatal TSH values collected from the cord at birth are not influenced by mode of delivery. This is in close agreement with results of the study done by R C Franklin et al in which T4,T3, FT$ RT3,TBG and TSH concentrations were measured in 229 healthy term neonates at birth and at 5, 10,and 15 days of age using radio immunoassay. They found that mode of delivery had no effect on mean values of TSH and hence concluded that mode of delivery need not be taken into account when determination of TSH is used for screening congenital hypothyroidsm in health when determination of TSH is used for screening congenital hypothyroidsm in healthy term neonates.[7] Similar findings were found by Fuse Y et al in a study to evaluate the effect of perinatal factors on TSH and thyroid hormone levels in cord blood. They found that there was no significant difference in the mean TSH levels among neonates born by caesarean section and those born by normal vaginal delivery.[6] However cohort study done by Aidan McElduff et al had different findings. They measured whole blood TSH levels in blood collected by heel-prick method 48 hours after birth by dissociation – enhanced fluoroimmunoassay performed on an auto DELFIA analyzer as part of newborn screening program. They found high TSH levels in neonates born by cesarean section. To explain this effect the authors proposed that topical iodine skin preparation

for cesarean section may deliver an iodine load to the mother, part of which can be transferred to the infant resulting in acute inhibition of thyroid function (Wolff-Chaikoff effect).[11] On the other hand in two different studies done by Lao TT[12] and Miyamato N[13] they found the results otherwise. Lao TT et al performed a study to assess the association between the mode of delivery with the umbilical cord plasma T4 and TSH concentration in full-term uncomplicated pregnancies. Umbilical cord plasma T4 and TSH concentrations were measured using radioimmunoassay. They found that babies born vaginally had statistically significantly higher umbilical cord plasma TSH than babies born by caesarean section. The authors concluded that the mode of delivery should be taken into consideration in the interpretation of umbilical cord plasma TSH results. Miyamato N et al measured the cord serum levels of TSH, T4 and T3 in 922 neonates delivered by mothers who had no thyroid disorders. The mean cord serum TSH level following elective Caesarean section was 6.5 ± 3.1, which was significantly lower than after normal vaginal delivery ie. 9.5 ± 6.0 ($p < 0.005$).$\pm 6.0\ (p < 0.005)$ But there was no correlation between the cord serum TSH level and the CH screening TSH levels in neonates born by vaginal delivery reflects delivery stress and mode of delivery does not influence the TSH values in CH screening in which blood is obtained at five day of life. In our study we measured TSH from neonatal samples collected from the cord at birth and have found that mode of delivery does not affect neonatal TSH values.

CONCLUSION

This study was undertaken to evaluate the effect of mode of delivery on TSH at birth. No significant difference was found between mean TSH values in groups of term neonates divided based on mode delivery. Hence it can be concluded from this study that mode of delivery does not affect TSH values of term neonates. Thus mode of delivery need not be taken into account when TSH values, in samples collected at birth in term neonates.

Source of Funding: We are grateful to KIMSDU, Karad, Maharashtra, for funding this research project

Conflict of Interests: The authors declare that there is no conflict of interests regarding the publication of this paper

Ethical Clearance: Taken by Institutional Ethics Committee, KIMSDU, Karad.

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DOI Numher: 10.5958/0976-5506.2018.01337.2

The Effectiveness of Acupressure Intervention and Birth Delivery Standing Position to Decrease the Intensity of Labor Pain

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ABSTRACT

Background: Pain is an extraordinary physiological process, and its intensity is generally experienced by almost all mothers differently. Acupressure is one of the non-pharmacological techniques in the management of labor pain. Another method is by employing a standing birth position.

Methods: This is A quasi-experiment with pre-test and post-test groups with the sample of 36 mothers in the acupressure intervention group and 36 others in the standing position group who were based on inclusion and exclusion criteria with cluster sampling technique. Paired T-Test was employed to examine the effect.

Results: The average intensity of labor pain in the acupressure intervention group before the intervention was 6.81 and after the intervention was 2.22. The average power of labor pain in the standing position group before the intervention was 6.81 and after the intervention was 2.56.

Acupressure intervention is more effective than standing position because the average value of the difference in degrees of pain before and after in the acupressure intervention group is 4.583, higher than the standing position which has an average difference in the degree of pain before and 4.250.

Conclusion: The midwives can apply acupressure interventions to minimize interventions with chemical actions or drugs.

Keywords-*: Labor Pain, Acupressure Intervention, Standing Position*

INTRODUCTION

The process of childbirth is marked by an increase in myometrium activity significantly so that contractions become regular and cause pain [(1)]. Pain in childbirth can affect the mother's condition in the form of fatigue, fear, worry and cause stress and anxiety which causes the release of the hormone which can cause fetal acidosis [(2)]. Anxiety felt by the mother will have an impact on the stronger sensation of pain that is perceived by the mother, so that not infrequently from some mothers finally decide for cesarean surgery [(3)].

Various attempts were made to reduce pain in labor, both pharmacologically and non-pharmacologically. Pain management is pharmacologically more effective than non-pharmacological methods. Some non-pharmacological techniques, namely breathing method, movement and position changes, massage, hydrotherapy, hot/cold therapy, music, guided imagery, maternity, acupressure, aromatherapy are ways to improve maternal comfort during childbirth and have a useful coping effect. Towards labor experience [(4)]. One popular method of labor induction is acupressure used during labor with the aim of reducing pain and shortening the

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duration [5].

This acupressure technique uses pressure, massage and sequencing techniques along the body's meridians or energy flow lines. Pressure or massage along the meridian line can eliminate existing blockages and improve the body's natural balance. Acupressure is more focused on the balance of all elements of life by providing stimulation at specific points by using the fingers, palms, elbows, knees, and feet which can reduce pain and make labor time effective, cheap and safe [6].

Another method to reduce labor pain is by giving birth positions. Certain positions can help reduce pain, for example, sitting position, leaning upright, leaning forward, kneeling forward, sorting back or leaning forward (upright / standing position) [7]. Usually, 7-14 of women have painless delivery, and almost 90% have labored with pain. 92% of patients experienced new experiences of childbirth, including 66% fear and 78% labor pain [8]. Pain causes frustration and despair, so some mothers feel worried that they will not be able to go through labor [9].

Another study of the birth touch proved that with a touch during labor, 56% experienced fewer cesarean action, a decrease in the use of oxytocin and a shorter labor duration of 25% [10]. The touch in labor can reduce anxiety, reduce pain and improve comfort, experience significantly shorter labor times, shorter hospital stays and lower incidence of postpartum depression [11].

Research on Acupressure techniques have been widely studied, but researchers will see a decrease in pain intensity in all women giving birth, not only to primiparous mothers. The reason for choosing Metro City, Indonesia as a place to conduct research is because the number of deliveries is quite high, and there are 10% of protective cases carried out by Caesar. Further, previously no research on acupressure intervention, and not all midwives have applied acupressure therapy to reduce pain at the first stage of labor.

METHODOLOGY

This research is intervention or quasi-experiment using approaches of pre and post-test design group. The total number of samples was 72 people, namely 36 acupressure intervention groups and 36 standing position groups. The sampling technique used was cluster sampling conducted in Metro City area from July to October 2017. A non-parametric dependent t-test was applied to examine the relationship among variables.

RESULTS

The age of mothers in the intervention group of acupressure and the standing position was mostly 20-35 (94.4%). The maternal parity in the acupressure intervention group was primipara (55.6%), while the mother with the standing position group was multiparous (58.3%). The work of mothers with the intervention group of acupressure and the standing position group on average were housewives (94.4%).

The childbirth pain intensity in the acupressure group intervention is depicted in Table 1.

Table 1: Frequency distribution of maternal pain intensity before and after acupressure intervention

Pain Level	Pain Level Before Acupressure (%)	Pain Level After Acupressure (%)
0	0	11.1
1	0	19.4
2	2.8	27.8
3	2.8	25
4	2.8	11.1
5	11.1	5.6
6	11.1	0
7	13.9	0
8	19.4	0
9	19.4	0
10	5.6	0
Total	**100 %**	**100%**

The respondents experienced the highest pain degree (10) before the intervention was two people (5.6%) and after the intervention, the highest degree of pain reduced to 5 experienced by two people (5.6%) also.

Table 2: Frequency distribution of pain intensity of birth before and after standing position

Pain Level	Pain Level Before Standing Position (%)	Pain Level After Standing Position (%)
0	0	5.6
1	0	13.9
2	0	30.6
3	5.6	27.8
4	11.1	13.9
5	11.1	8.3
6	16.7	0
7	11.1	0
8	22.2	0
9	13.9	0
10	8.3	0
Total	**100 %**	**100%**

The highest pain level of respondents before the intervention was 10 experienced by three people (8.3%), and after the intervention, the highest degree of pain was only 5 occurred to 3 people (8.3%).

The result of the statistical test is shown in Table 3.

Table 3: Acupressure and standing position intervention relationships

Intervention	Mean	SD	SE	P-value	N
Acupressure	4.583	1.317	0.220	0.000	36
Standing Position	4.250	1.461	0.244	0.000	36

Table 3 shows that the p -values of the intervention group acupressure and the standing position group are both 0.00 $<\alpha$ (0.05) indicating that there are differences in the degree of pain before and after the intervention in both groups.

For the average value of the difference in pain degrees, the mean acupressure intervention was 4.583, and the mean standing position was 4.250. The data showed that the mean of the acupressure intervention group was more significant than the mean standing position implying that acupressure intervention is more effective than a standing position.

DISCUSSIONS

The pain felt by respondents before being given acupressure is included in the category of mild discomfort to severe pain. Pain is very subjective, not only depends on the intensity but also depends on the mother's mental state when facing labor. The maternal psychological state will make the mother become stressed or otherwise trigger the release of catecholamine and adrenaline hormones. These catecholamine will be released in high concentration during labor [12]. Acupressure provides the advantage that it can physiologically control labor pain by stimulating local endorphin production and closing gate control or pain gates through the release of large fibers and acupressure is effective in reducing labor pain [13]. Acupressure techniques at points L14 and BL 67 can reduce pain and make labor time effective [14]. By stimulating specific points along the meridian system, which are transmitted through large nerve fibers to the reticular formation, the thalamus and limbic system will release endorphins in the body [15]. Endorphins are naturally occurring painkillers produced in the body, which trigger a calming and uplifting response in the body, having a positive effect on emotions, can cause relaxation and normalization of bodily functions. As a result of the release of endorphins, blood pressure decreases and improves blood circulation [16]. Researchers assume that acupressure intervention can be a safe choice and minimal side effects in reducing the degree of labor pain in delivery mothers in the first stage, especially at the point L14 and Bladder 32.

The concept or philosophy of the professional midwife who believes that pregnancy and childbirth are natural/physiological processes is conducted by teaching various kinds of maternity positions. One of the efforts is to condition and seek maternity positions such as upright position/standing which supports labor to be able to walk physiologically. This is also one method that is very helpful in actively responding to pain and reducing the length of labor during the active phase [17]. The upright position in the first phase of active labor can shorten the delivery time of approximately 1 hour and can provide relaxation to blood vessels and can also provide acceleration of head reduction due

to the earth's gravitational force. The upright position can also improve self-control against pain. There is a slight reduction in pressure in the blood circulation that provides more oxygen to the baby which is very good for both mother and baby [18]. Upright and walking positions during childbirth were identical to a reduction in epidural analgesics. The upright position at the first stage is for an attitude that avoids lying flat on the bed without being followed by movement/mobilization during labor when I am active. The first phase of the busy period is a critical phase in the progress of childbirth. Therefore every childbirth helper must be able to control and supervise the labor process so as not to enter into a pathological situation [19].

Acupressure is a form of physiotherapy by giving massage and stimulation to specific points on the body (energy flow lines or meridians) to reduce pain or change organ function. According to the theory of gate control, pain impulses can be regulated or even inhibited by defense mechanisms in the central nervous system, one attempt to close the defense which is a theory of pain relief. This theory says that there is a mechanism gate open on the nerve endings of the spinal column which can increase or decrease the flow of nerve impulses from peripheral fibers to the central nervous system. If the gate is closed, there is no pain, but if the gate is open, there will be a pain. In this case, pain is controlled by an inhibitory action on the pain pathway [20]. In this study, pain reduction was influenced by stimulation carried out through acupressure. Acupressure technique has a significant effect on reducing the level of pain as the massages performed at specific points during acupressure therapy make the respondent feel more comfortable and the pain decreases [21].

CONCLUSION

The average intensity of labor pain in the acupressure intervention group before the intervention was 6.81 and the average intensity of labor pain in the acupressure intervention group after the intervention was 2.22. The average intensity of labor pain in the standing position group before the intervention was 6.81 and the average intensity of labor pain in the standing position group after the intervention was 2.56. Acupressure intervention is more effective than standing position, with an average value of the difference in degrees of pain before and after that is 4.583, the average is 0.33 greater than the standing position group with an average difference in the degree of pain before and after 4.250.

Ethical Clearance: The Ministry of Health Polytechnic approved this research in Tanjung Karang, Indonesia. A research permit was requested from the local health authorities. We also wish to thank all the participants who contributed to this study.

Conflict of Interest: Nil

Source of Funding: The Ministry of Health Polytechnic Tanjung Karang, Indonesia.

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DOI Numher: 10.5958/0976-5506.2018.01338.4

Determinants of Vendor-Client Relationship in Medical Equipment Industry

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ABSTRACT

Client Relationship Management (CRM) is a practice that retains the existing clients and also acquires new prospective customers. A healthier client rapport custom would perk up the client relation with the company which in reverse develop the revenue of the company. This would capitalize on the cross selling and also the up selling. CRM softwares moreover play a predominant role in giving a better experience to the clients and the businesses. This study examines the perception of doctors on their relationship with the equipment suppliers. Moreover, it also deals with the determinant of vendor-client relationships. Data has been collected from 60 doctors who locate in Chennai through questionnaire. The results specify that all doctors experience similar relationship with their equipment suppliers. It also argues that trust and commitment created by suppliers and the quality of equipments predominantly influence the vendor-client relationship.

Keywords: *Health care, CRM, medical equipments, doctors.*

INTRODUCTION

The medical devices are used in a higher pace in the healthcare industry. The Healthcare professionals play a predominant role in the handling of these medical equipments. The Biomedical equipments fetch enhanced patient care. In this manner, hospitals boost the fulfilment level of the patients. This encompasses pharmaceutical sector, biomedical equipments, biotechnology and so on. When we consider the biomedical equipments industry, it is incredibly essentials they bring about medical innovation. Surrounded by an aging populace and plentiful healthcare issues prevailing, the stipulation for numerous sophisticated equipments is obligatory. For an uninterrupted support to the patients, relationship between vendor and doctors is most vital.

Client Relationship Management (CRM) triggers the conception of high eminence service deliverance and maximizes the client satisfaction. Understanding what the client unerringly wants is the prime feature in CRM. Proactive problem solving, speedy delivery, improvements[9], knowledge management and global mind-set[22]enhance vendor-client relationships. Moreover, the relational learning of the sales personal also improves client relationship[26]. Communicating with the clients frequently on every occasion when they need answer from the company make them experience a sense of engagement and perk up their loyalty towards the brand. Augmented profitability and efficiency can be obtained all the way through a superior client relationship custom. CRM operate a vital role in having a well-built relationship with the customers. It is obvious that to acquire a new customer is greatly costlier than retaining an old customer. The advertising client agency promotes the positive impacts of the client relationship[29].

REVIEW OF LITERATURE

Size of the healthcare doesn't have any impact on the satisfaction level[5]. Research works give directions for assessment of relationship between client and implementation outcome[7]. The relationship aspects comprise of clinicians, client and the court[4]. Nursing leadership is important to continuously assess the quality of healthcare provided[15]. There are differences in supplier i.e. patron[21]. The client-provider relationship not only acts as a therapeutic agent but also acts as a facilitative agent to match the services with the clients' requirements[14].

The relationship between vendor and client is becoming more familiar[25]. Effective relationships which in turn improves organization[31] and its project

performance[16]. Social client relationship is also must[18]. The agencies misinterpret the basis for the foundation of conflicts inside the relationship[27]. Moreover, incentives influence relationship[2].

The socioeconomic barriers have been eliminated and healthcare in India is made equitable to all[30]. Indians happen to spend more from their pockets[10]. Trusting involves social practices[17]. Policy makers should address the changing relationship[6]. Dynamic client set is the source of exploitation and exploration[1].

DETERMINANTS OF VENDOR-CLIENT RELATIONSHIP

For assessing vendor-client relationship, primary data has been collected from 60 clients i.e Doctors in Chennai, India through questionnaire method. Doctors are selected based on simple random sampling. The demographic profile of selected doctors is analyzed with the means of frequency analysis. The details include gender and total number of experience in the health care industry. Results of frequency analysis are displayed in Table 1.

Table 1: Demographic Profile

Gender	**Frequency**	**Percent**
Male	57	95.0
Female	3	5.0
Total	**60**	**100**
Experience	**Frequency**	**Percent**
< 1 Year	22	36.7
1 - 5 Years	20	33.3
> 5 Years	18	30.0
Total	**60**	**100**

Table 1 includes frequency and its percentage value. It is obvious from the table that majority of the doctors are male with experience of around five years.

The customer base shows the way to the profit margin. Collaborating with the clients and treating them as partners will aid to progress the client relationship with the company. Customer advocacy have an affirmative impact on value of the relationship[28]. The Customer relationship is understood by using the following dimensions – defection, cross-buying, word-of-mouth, motivation, commitment and engagement[8]. The promises specified by the company should be preserved at all times. Customer relationship enhances welfare by dipping the coordination functions and assists the sellers to know about the interrelated buyers' utility[23]. The perception about the relationship is measured using promises, responsiveness, problems, respect, management and pleasure.

In order to ascertain the impact of demographic profiles such as gender and years of experience on the perception of doctors about vendor-client relationship, the present study handles independent samples t test and analysis of variance.

Table 2: Difference between Relationship and Demographic Profile

S. No.	**Relationship**	**Gender**		**Experience**	
		T	**Sig.**	**F**	**Sig.**
1.	Vendor always keeps the promise (Promises)	1.907	0.63	0.272	0.763
2.	Sales personnel are responsive to my needs (Responsiveness)	0.541	0.593	1.405	0.254
3.	Company listens to the problem (Problems)	2.004	0.050	0.518	0.599
4.	Sales personnel treat me with consideration and respect (Respect)	0.415	0.679	0.833	0.440
5.	Opportunity to meet with company management (Management)	0.680	0.499	0.913	0.407
6.	We are pleased to have business (Pleasure)	1.333	0.188	1.009	0.371

Table 2 shows the values of T and F and its significant levels. It is clear from the table that majority of the variables has the significant value of greater than 0.05. It shows that perception about the relationship is not varying based on the demographic profile of the respondents. Doctors have collective perception towards their relationship with vendors.

Customer trust is a responsive behaviour towards what they obtain. This trust makes the company to withstand in the competitive market. It inversely builds up the brand value for the business. The performance of the supplier in providing product quality in addition to sales service quality is important to create trust[19]. The trust can be constructed by means of intent to take action according to the expectation of the customer and should have the competence towards it. Any kind of interaction with the clients that damages the trust would change the business upside down. Customer loyalty is directly influenced by perceived risk as well as customer trust[13]. This study uses security, performance, responsiveness, service, transactions and loyalty for measuring the perception of doctors towards trust created by the vendor.

Table 3: Difference between Trust and Demographic Profile

S. No.	Trust	Gender		Experience	
		T	Sig.	F	Sig.
1.	I feel secured when I do business (Security)	1.355	0.372	1.465	0.240
2.	I have belief on product's performance (Performance)	0.899	0.366	0.424	0.657
3.	Respond to our emergency situations (Responsiveness)	0.912	0.166	0.167	0.846
4.	Risk-free services (Service)	1.404	0.188	0.532	0.948
5.	The Financial transactions are reliable (Transactions)	1.333	0.171	1.235	0.371
6.	Over the last few years, my loyalty had grown stronger (Loyalty)	1.332	0.172	1.532	0.652

From Table 3, it is perceived that all the significant values are greater than the prescribed limit of 0.05. It concludes that all doctors have similar perception about the trust created by vendor. Doctors with different gender and level of experience have similar perception.

Commitment to the business will drive to unbreakable relationship and loyalty. Each and every interaction with the client is valuable and creates a partnership value. Always vendors should provide timely service, which would make the clients happy. From sales men perspective, there is a significant relationship between the manufacturers' quality decisions and the retailers' sales efforts[11]. The family plays a key role in the commitment-trust theory[24]. Table 4 discusses about the impact of demographic profile of doctors on their perception about commitment developed by the suppliers.

Table 4: Difference between Commitment and Demographic Profile

S. No.	Commitment	Gender		Experience	
		T	Sig.	F	Sig.
1.	Vendor sights business dealings from a durable perspective (Long-term relationship)	2.215	0.051	2.922	0.824
2.	Company policies fulfill our expectations (Expectations)	0.377	0.707	0.195	0.438
3.	Company's approach to business says "win-win" situations for both of us (Win-Win)	1.486	0.143	0.837	0.477
4.	The products are customized to our needs (Customize)	1.598	0.116	0.751	0.606
5.	Sales personnel regularly visit me (Regularity)	0.228	0.821	0.506	0.888
6.	Feedback mechanism (Feedback)	0.471	0.639	0.119	0.465

Table 4 shows significant values of independent samples t test and analysis of variance. The significant values of both T and F are larger than 0.05 in majorities of cases. Hence, all doctors have identical perception towards long-term relationship, expectations, win-win, customize, regularity and feedback.

The sales revenue increases when the standards are institutionalized[12]. There are two angles from which the quality cues can be examined – intrinsic (reputation of the company) and extrinsic (popularity, price and engagement of the user). Both the intrinsic and extrinsic quality cues affect the sales of the company[3]. This aids to toughen the competitive image of the company in the market. There is a link between the management of the quality system and the service provided after sales[20]. The perception on quality of the merchandise is measured using ideas, delivery, packing, documentation, accessibility and deadlines.

Table 5: Difference between Quality and Demographic Profile

S. No.	Quality	Gender		Experience	
		T	Sig.	F	Sig.
1.	Vendor offers valuable ideas (Ideas)	1.370	0.176	0.934	0.399
2.	Orders placed with vendor are always processed correctly (Delivery)	0.590	0.557	0.001	0.999
3.	Packaging is sufficient to guard the merchandise during shipment (Packing)	1.023	0.311	0.321	0.726
4.	Deliveries are made with the proper documentation (Documentation)	0.830	0.410	0.194	0.824
5.	Company is accessible when I need assistance (Accessibility)	0.803	0.425	1.807	0.173
6.	Deadlines are always met (Deadlines)	1.370	0.176	0.734	0.399

The difference between clients view on quality of equipments and their demographic profile are measured and results are shown in Table 5. The results indicate that significant values generated through all the statistical tools display the value of greater than 0.05. All the doctors have equal amount of perception about quality of merchandise.

Trust, commitment and quality play a greater role in building the relationship between vendor and client. To gauge the extent of influence of above mentioned dimensions on relationship, multiple regression has been executed.

Table 6: Determinants of Vendor-Client Relationship

	Unstandardized Coefficients		Standardized Coefficients	Sig.	R	R Square
	B	Std. Error	Beta			
(Constant)	1.125	0.498		0.000	0.969	0.623
Trust	0.056	0.193	0.038	0.012		
Commitment	0.088	0.200	0.053	0.003		
Quality	0.491	0.143	0.444	0.011		

Table 6 shows the values of correlation (R), degree of determination (R square), beta and significant value. Degree of determination defines the extent of influence of perception of doctors about trust created by vendors, commitment developed by vendor and quality of the equipments on vendor-client relationship. The perception about relationship is determined to an extent of 63 percentage. Significant values are at one percent level. It is concluded from the table that trust, commitment and quality positively influences the vendor-client

relationship.

CONCLUSION

In traditional CRM, incorporation of sales and marketing was exercised. But for the businesses to survive in future, CRM should be done by integrating sales, marketing and operations. Being a guide to the client and engaging them will aid in enhancing the customer retention. Dimensions of trust and commitment shaped by vendors and quality of the merchandise determine the level of relationship between vendor and their clients. Mass personalization can be followed by companies in order to provide better support. Usage of disruptive technology by handling a business model might improve customer loyalty towards the company. Client referral programs should be developed. Business analytics and Enterprise application integration along with mobile CRM as well as social media integration are popular in recent times.

Ethical Clearance - NA

Source of Funding - Self

Conflict of Interest - NIL

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DOI Numher: 10.5958/0976-5506.2018.01339.6

Macronutrient and Micronutrient Knowledge among Adolescent Girls of Udupi Taluk Karnataka

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ABSTRACT:

Background: The growth and prosperity of a nation depend primarily on the nutritional status and development of the adolescent girls as they not only constitute one tenth of nations' population but also influence the growth of remaining population. **Objective**: The study was conducted to assess the macronutrient and micronutrient knowledge of adolescent girls. **Method**: Community based cross sectional survey was conducted among adolescent girls (N=422) of the selected schools of Udupi Taluk Karnataka. Structured knowledge questionnaire was used to assess the knowledge level of adolescent girls. Descriptive statistics was used to analyse the data. **Results**: The study results revealed that majority 275 (62.5%) of the adolescent girls were belonged to 15 years of age and most 350 (82.9%) of them were Hindus. Majority, (58.3%) of the adolescent girls were having poor knowledge on macronutrients and micronutrients. **Conclusion**: There is a need of educational programme on importance of macronutrient and micronutrient intake. These in turn helps to prevent the reproductive related complications in future.

Keywords*: adolescent girls, knowledge, macronutrient, micronutrient, Udupi Taluk.*

INTRODUCTION

Adolescence is the transitional stage of development between childhood and adulthood and is associated with marked physical growth, reproductive maturation, and cognitive transformations. Girls normally begin their adolescent growth spurt at an earlier age than boys[1]. The growth and prosperity of a country depend greatly on the nutritional status and development of adolescent girls as they not only constitute one tenth of its population but also influence the growth of the remaining population. The word adolescent is derived from the Latin word "adolescere" meaning "to grow", "to mature". The WHO has defined adolescent as the age period between 10-19 years for gender[1]. Adolescent during the teenage years of 13 to 19 is the time of dramatic change, the process of physically developing from a child to an adult is called puberty. Nearly 45% of the maximum skeletal mass and 15% of adult height are gained during adolescent phase[2].

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Nutrition and physical growth are integrally associated; optimal nutrition is essential for achieving full growth potential[3]. At the peak of the adolescent growth spurt, the nutritional needs may be twice as high as those of the remaining period of human life. Failure to consume an adequate diet during this period can result in delayed sexual maturation and can arrest or slow linear growth. It was found that the clinical nutritional status of Indian girls in deprived communities was far below the ICMR (Indian Council of Medical Research) as well as NCHS (National Centre for Health Statistics) standards[4,5]. A study conducted to assess the impact of nutritional knowledge status of adolescent girls on their health in Hisar District of Haryana state revealed that majority (61.62%) of the girls had average nutritional knowledge[6].

Very few studies were carried out on nutritional knowledge among adolescent girls as most of the research was carried out among under-five children and the researcher could not found any quality studies in this area. All these motivated the researcher to take up this study to assess the knowledge of macronutrient and micronutrient among adolescent girls in selected schools of Udupi Taluk Karnataka.

The purpose of the study was to assess the knowledge of macronutrient and micronutrient among adolescent girls in selected schools of Udupi Taluk Karnataka. This knowledge will help to understand the area that is required to be focused in future by further studies which in turn will help the health care professionals to develop recommendations for preventing deficiencies that may burden the reproductive health in future.

MATERIALS AND METHOD

Community based cross sectional survey design was adapted for the present study and data was collected from December 2015 to July 2016.

Study was conducted among adolescent girls studying in selected upper primary schools and Pre-University colleges of Udupi Taluk, Karnataka. Udupi Taluk is comprised of total 89 High schools and Pre University Colleges, out of which 22 are Government schools, 28 are Private Aided schools and 39 are Private Unaided schools. Six schools were selected using simple random technique and cluster random sampling technique was adopted for selecting the study samples.

422 adolescent girls between the ages of 15-17 years constituted the study subjects for the present study. Adolescent girls studying in class 9th, 10th, 11th and 12th were chosen for the study. The sample size was calculated on the basis of pilot study result by using the formula of sample size for estimating the proportion, thus 422 adolescent girls were enrolled for the study.

The Institutional Ethics Committee of Kasturba Hospital Manipal issued ethical clearance certificate **(approval no: 683/2015)**.

Structured knowledge questionnaire was prepared by the investigators by reviewing the literature and discussing with the subject experts and was pretested in a school among five students. The tool was validated with seven experts from dietetic department, nursing department. Investigators gave a score of "1" for each correct answer and "0" for each incorrect answer. The scores were arbitrarily classified as good with a score of 27-36 (>75%), average 18-26 (50%-74%) and poor 0-17 (<50%) respectively.

After obtaining the written informed consent from the subjects, the information regarding demographic characteristics of the subjects was collected by using demographic proforma, modified Kuppuswamy socio-economic scale and the knowledge on macronutrient and micronutrients were collected through a well-designed structured questionnaire. The variables studied were: age, place of residence, parents' education, parents' occupation, and monthly family income, type of dietary habits, menstrual cycles, source of information and involvement in sports activities.

RESULTS

For data analysis, SPSS version 16 was used. Descriptive statistics was used to analyse the data.

Table 1: Frequency and percentage distribution of sample characteristics ***N=422***

Sl.no	Variables	Frequency	Percentage
1	**Age in years**		
	15	275	65.2
	16	116	27.5
	17	31	7.3
2	**Religion**		
	Christian	55	13.0
	Hindu	350	82.9
	Muslim	16	3.9
	Sikh	1	0.2
3	**Place of residence**		
	Rural	217	51.4
	Urban	205	48.6
4	**Parents education**		
	Graduate/ postgraduate	216	51.2
	Intermediate or post-high school diploma	36	8.5
	High school certificate	68	16.1
	Middle school certificate	12	2.8
	Primary school certificate	69	16.4
	Illiterate	21	5.0
5	**Parents occupation**		
	Profession	222	52.6.
	Semi-profession	68	16.1
	Clerical	4	0.9
	Shop owner	31	7.3
	Farmer	40	9.5
	Skilled worker	11	2.6
	Semi-skilled worker	15	3.6
	Unskilled worker	24	5.7
	Unemployed	7	1.7

Cont... **Table 1: Frequency and percentage distribution of sample characteristics** ***N=422***

6	**Monthly family income (in rupees)**		
	>36,997	101	23.9
	18498-36996	135	32.0
	13874-18497	59	14.0
	9249-13873	52	12.3
	5547-9248	22	5.2
	1866-5546	18	4.3
	<=1865	35	8.3

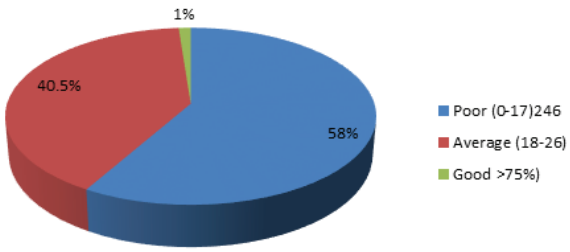
The data presented in Table 1 show that majority 275 (65.2%) of the adolescent girls were at the age of 15 years and most of 350 (82.9%)of the adolescent girls belonged to Hindu religion. The majority of the parents of adolescent girls 216 (51.2%) were having graduate or post graduate education and most of the parents 222 (62.6%) were professionals with a monthly family income of rupees 18,498-36,996, 135 (32%).

Table 2: Frequency and percentage of underlying factors related to dietary pattern

N=422

Sl.no.	Variables	Frequency (F)	Percentage (%)
1	Ever heard about micronutrient and macronutrient		
	Yes	347	82.2
	No	75	17.8
2	Source of information		
	Friends	29	6.9
	Health personnel	17	4.0
	Parents	36	8.5
	Teachers	239	56.6
	Books	25	5.9
	Magazines	5	1.2
	Newspaper	2	0.5
	Internet	2	0.5
	Television	1	0.2
	None	66	15.6
3	Menstrual cycle		
	Regular	352	83.4
	Irregular	56	13.3
	Not attained	14	3.3
4	Involvement in sports activity		
	Yes	346	82
	No	76	18
5	Taking any nutrient supplement		
	Yes	230	54.5
	No	192	45.5
6	Number of meals per day		
	1-2	90	21.3
	2-3	208	49.3
	3-4	114	27.0
	>4	10	2.4
7	Type of diet		
	Vegetarian	56	13.28
	Non-vegetarian	361	85.54
	Ovo-vegetarian	5	1.18

Data presented in Table 2 show that majority of 347 (82.2%) adolescent girls had heard about micronutrient and macronutrient. Most of the adolescent girls 239 (56.6%) got information from teachers. More than 3/4th 342 (83.4%) of the adolescent girls were having menstrual cycles regularly. Majority 346 (82%) of the adolescent girls were involved in sports activities. Majority 208 (49.3%) adolescent girls were having 2-3 meals per day and maximum 361 (90.25%) of the adolescent girls were non-vegetarians.



Frequency and percentage distribution of level of knowledge *N=422*

The data presented in figure 1 describes that majority 246 (58.3%) of the adolescent girls were having poor knowledge on micronutrient and macronutrient. About 171 (40.5%) of the adolescent girls were having average knowledge and very few 5 (1.2%) were having good knowledge on micronutrient and macronutrient.

Table 3: Range, Mean and Standard Deviation of knowledge scores of adolescent girls on macronutrient and micronutrient N=422

Knowledge score	Range	Mean	Standard deviation
	4-29	15.58	5.31

The data presented in Table 3 show that the knowledge score for macronutrient and micronutrient ranged between 4 and 29 with a mean of 15.58 ± 5.31.

Further analyses in Table 4 describes the area wise maximum score, mean, standard deviation and mean percentage scores of adolescent girls on macronutrient and micronutrients.

Table 4: Area wise range, Mean, Standard Deviation and mean percentage scores of adolescent girls related to macronutrient and micronutrient N=422

Area of knowledge	Maximum score	Mean	Standard deviation	Mean percentage
Various nutrients	6	2.74	1.55	45.66
Balanced diet	4	2.20	0.89	55
Nutrional requirements	3	0.33	0.51	11
Macronutrients and micronutrients	7	3.36	1.85	48
Nutrition and physical fitness	2	0.96	0.66	33
Food item	13	6.18	2.31	47.53

The data presented in Table 4 describe the mean standard deviation and mean percentage scores of different areas of knowledge related to macronutrient and micronutrients. The mean percentage score was highest (55%) in the area of balanced diet whereas in remaining areas the mean knowledge percentage score was below 50% that is in the area of Nutrional requirement (11%), macronutrient and micronutrient deficiency and excess (48%), nutrition and physical fitness (33%) and food items (47.53%) respectively.

DISCUSSION

The current study findings showed that majority of the adolescent girls were 15 years of age and most of them were belonged to Hindu (82.9%) religion. More than 50% of the adolescent girls' parents were having

graduate or postgraduate level of education, but only 23.9% of the parents were having the income of Rs. 36,997per month. The findings of the present study were supported by a study done by Kotecha PV in 2013 in urban Baroda, India reported that 93% of the adolescent were Hindus, majority of the parents were having graduate level of education and very few parents were having the monthly earnings of more than Rs. 30000/-[7].

The present study findings revealed that 58.3% of the adolescent girls were having poor knowledge related to micronutrient and macronutrients. The study findings were supported by a study done by Alam N (2010) in rural Bangladesh reported that majority of the adolescent girls were not able to name the main food sources of energy and protein and 36% of the adolescent girls were not aware about the importance of taking extra nutrients[8].

CONCLUSION

The present study shows knowledge level of adolescent girls regarding macronutrient and micronutrient was poor. Thus it is very essential for the researcher to assess the dietary recall to identify the deficient areas in terms of macronutrient and micronutrient intake by comparing with RDA values and also sensitizing programmes at school and community level can be planned to avoid the adverse effect of its inadequacy in future especially the reproductive related complications.

Financial support and sponsorship: Nil

Conflict of Interests : There is no conflict of interests.

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DOI Numher: 10.5958/0976-5506.2018.01340.2

Health Status of Under Five Children Living in Urban Slums

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ABSTRACT

The primary objective of the research was to study the health status of children under the age of 5 years living in urban slums. This study included 224 under-five Children living in urban slums of Udupi Taluk, Karnataka. A total of 17 urban slums were selected randomly. Cluster random sampling was used. A total of 224 under-five children participated in the study. The mean age of the children was 28±1.6 months. The majority were boys (58.5%). Among the 224 children assessed in this study only 8.5% could be classified as healthy,40.6% as moderately healthy and 54.5% as unhealthy. In this study, we found that the overall health status of children aged between 1 month to 60 months based on morbidity, immunization status and nutrition status was unhealthy.

Keywords : *Health status, under 5 children, urban slums*

INTRODUCTION

Health status is a holistic concept that is determined by many factors apart from the presence or absence of any disease. Life expectancy or self-assessed health status often summarize it, and more broadly includes measures of functioning, physical illness, and mental wellbeing.[1] According to the constitution of the World Health Organization, 1948: "Healthy development of the child is of fundamental importance; the ability to live harmoniously in a changing environment is essential to such development.[2] According to the Census of India, slums have been defined as residential areas where dwellings are unfit for human habitation by reasons of dilapidation, overcrowding, faulty arrangements, design of buildings, narrowness or faulty arrangement of streets, lack of ventilation, light, sanitation facilities or any combination of these factors which are detrimental to safety and health.[4] Under-five is the most crucial age group in the growth and development of children.[3] Physical and mental growth occurs mainly in this age group and the risk of child death is the highest in this age group.[3]

Data on urban slum health and health care accessibility of slum populations is very scanty, especially for children living in urban slums. Most of these slum populations consist of migrants and mobile population, with barriers such as a lack of hygiene and sanitation, lack of care, insecurity, under nutrition, lack of access to a proper education, lack of access to health care and a susceptibility to violence. Infectious diseases like diarrhoea, acute respiratory infections and malaria are the world's leading causes of morbidity and premature death especially in children in developing countries.[5] They can prevent through complete immunization, nutritional supplement, proper care, sanitation and hygiene. Factors like high birth order, younger age, sex, socioeconomic status, poor environmental sanitation, contaminated water and malnourishment were associated with higher incidence of childhood disease.[6]

Inadequate safe food, nutrition, hygiene and sanitation, care and security, education, violence are

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the major problems in impoverished urban slums, and the victims are children. Proper nutrition is one of the factors in helping a child achieve healthy growth and development. So there is a need to study the status of children's health, which will help in implementing interventions and making recommendations to improve the health condition of the urban slum child population.

METHODOLOGY

This community-based cross-sectional study was designed to assess the health status of under-five children in urban slums of Udupi Taluk, Karnataka. Cluster random sampling technique was used. A total of 17 urban slums were selected randomly. Complete enumerations of eligible mothers of under-five children from all selected slums was carried out. A structured and validated questionnaire was used for collection of data on background information about the family and household characteristics, personal hygiene, common childhood diseases (fever, cough, diarrhea, pneumonia, skin, ear and eye infections, angular stomatitis and dental caries), general appearance, immunization status, nutrition status and mother's health-seeking behavior during a child's illness. Nutritional status of under-five children was assessed by taking anthropometric measurements like height, weight and Z-score which were calculated according to the National Centre for Health Statistics' (NCHS) reference data for age and sex of a child. Children were classified as underweight and normal weight; under nutrition was defined as weight for age less than -2SD of the NFHS reference. The weight of the under-five children was measured using a digital weighing machine. To ascertain the information about immunization coverage, the respondent was asked to provide their immunization card, if they had any. In the case of unavailability of the card, information regarding the administration of vaccines was recorded on the basis of the respondent's memory. For BCG, the immunization was assessed by the presence of the scar.

Protocol approval was taken from the Institutional Ethics Committee. Written informed consent from all the participants was taken before conducting the study. The data collected was numerically coded in SPSS-16. The data was summarized using descriptive statistics, frequencies and percentages. Statistical differences between categorical variables were assessed using the Chi-square or Fischer exact test (if cell value was less than 5). Means were compared using the Student's T-test. P-value <0.05 was considered statistically significant.

RESULTS

A total of 224 under-five children participated in this study. The mean age of the children was 28±1.6 months, and 58.5% were boys. The mean age of the mothers was 22.9 ±4.3 years: the range was from 16 to 40 years. The mean age of the fathers was 32.4±2.5 years (range:17 to 40 years). Out of the parents included in the study, 67.4% of mothers and 35.3% of fathers were illiterate; 94.6% of mothers and 97.8% of fathers were daily wage labourers; 5.4% of mothers were housewives and 2.2% of fathers were self-employed; and half of the families had only two children (mean children was 2.7±1.08). Almost two-third (64.3%) of families had one under five child, and remaining families had two under-five children. About 86% of the respondents were Hindus; 62.1% had a monthly family income below Rs.5000; and 88% of the respondents were living in *kutcha* houses. The mean occupants in a household was 7±2 (range 4 to 14 members); 84.4% of households had drinking water facility in the slums or within one kilometre of the slums; and 76.3% people did not use any method to purify drinking water while 23.7% used boiling as a purifying method. Almost two-third of the households did not have toilet facility; cooking in 74% of households were inside the house; and 73.2% of respondents did not use mosquito nets.

Figure 1 shows the morbidity conditions. Skin infection and cough constituted 45.1% and 44.6% of morbidities respectively, followed by fever (30.8%), pneumonia (27.7%), diarrhoea (24.1%), injuries (22.8%), angular stomatitis (21.9%), ear infection (21.4%) and eye infection (7.6%). Table 3 shows that 61.2% of respondents showed their immunization card during data collection whereas 38.8% of respondents did not possess any card/document. Based on the availability of the immunization card, 38.8% of under-five children were fully immunized whereas 61.2% of them were partially immunized. This study revealed that 33.6% of children were underweight/malnourished. 8.5% of children were healthy, 40.6% of children were moderately healthy and 54.5% of children were in poor health.

Table 1: Socio-demographic background of under-five children and their parents, N=224

Characteristics	Categories	Number (%)
Age group (in months)	<12	24 (10.7)
	12-23	61 (27.2)
	24-35	68 (30.4)
	36-47	30 (13.4)
	48-60	41 (18.3)
	Mean ± SD	26.8 ±1.6 months
Gender	Male	131 (58.5)
	Female	93 (41.5)
No. of children in the household	1	15 (6.7)
	2	102 (45.5)
	3	60 (26.8)
	4	32 (14.30
	5	10 (4.5)
	6	5 (2.2)
Total number of under-five children in the study households	1	144 (64.3)
	2	80 (35.7)
Age of father	Mean & SD	32.4 ± 2.5 years
Age of mother	Mean & SD	22.9 ± 4.3 years
Literacy level of father	Educated	145 (64.7)
	Not educated	79 (35.3)
Literacy level of mother	Educated	73 (32.6)
	Not educated	151 (67.4)
Occupation of father	Daily wage worker	219 (97.8)
	Self employed	5 (2.2)
Occupation of mother	Daily wage worker	212 (94.6)
	Housewife	12 (5.4)

Table 2: Facilities and hygiene practices in surveyed households, N=224

Facilities / practices	**Categories**	**Number (%)**
Drinking water facility	Yes, in the slum/within 1km No	189 (84.4) 35 (15.6)
Measures to improve safe drinking water	Boiling Nothing	54 (24.1) 170 (75.9)
Cooking facility	In the house In a separate building (kitchen separate) Out door	165 (73.7) 12 (5.4) 47 (21.0)
Defecation practices	Closed defecation (public/shared toilet) Open defecation	79 (35.3) 145 (64.7)
Residual spray in past 12 months	Yes No Don't know	53 (23.7) 91 (40.6) 80 (35.7)
Use of mosquito nets	No Yes	60 (26.8) 164 (73.2)

Table 3: Health status of under-five children based on morbidity, immunization and nutritional status, N=224

Status	**Categories**	**Number (%)**
Morbidity	Have morbidity	174 (77.7)
	No morbidity	50 (22.3)
Immunization	Fully immunized	87 (37.1)
	Partially immunized	141 (62.9)
Nutritional	Under nutrition	73 (32.6)
	Normal	151 (67.4)
Overall health status based on morbidity, immunization status and nutrition status	Healthy	19 (8.5)
	Moderately healthy – only one condition not satisfied	91 (40.6)
	Unhealthy – more than one condition satisfied	122 (54.5)

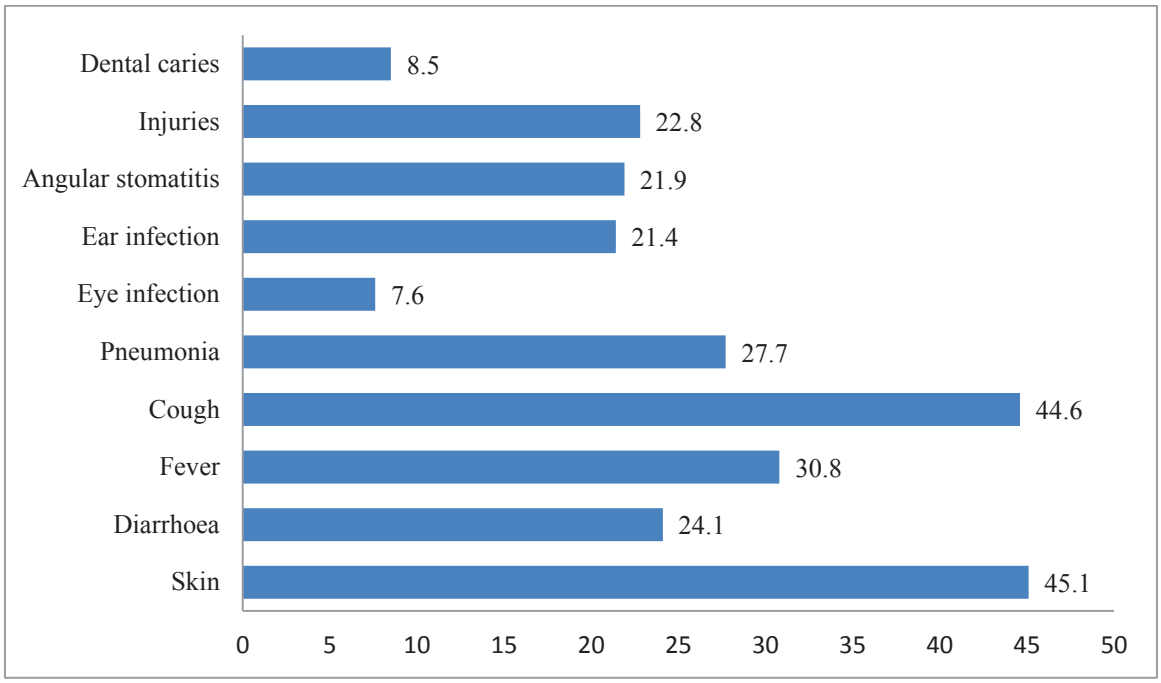

Figure 1: Proportion of under-five children by morbidity conditions based on general and physical examination, N=224.

DISCUSSION

The present study was conducted to assess the health status of under-five children living in the urban slums of Udupi Taluk, Karnataka. The study results reveal that a majority of the under-five children were unhealthy. Only 19 out of 224 children could be classified as healthy. This study shows that 33.6% of under-five children were underweight. Basu D et al. reported similar findings.[15] Under nutrition was high among children of illiterate mothers (63.8%). Children of working mothers were affected more by morbid conditions(96.6%) as compared to homemakers. Morbidity was also found to be high among children belonging to low income families (66.1%) and low socioeconomic background (93.1%). Similar findings had been reported by Tada Y et al.[17], Abuya BA et al.[16] and Safikul Islam et al.[9]

The most common morbidities in the under-five children were skin infection (45.1%), fever (30.8%), cough (44.6%), pneumonia (27.7%) and diarrhoea (24.1%). This is similar to the findings seen by Adhikari D et al.[8], Srivastava DK et al.[7] and Taffa N et al.[11] These morbidities were then correlated with factors like a lack of personal hygiene, mother's age, education and occupation, family income and type of household which is similar to findings of other studies.[10][19][13] Ujwala U et al.[19] observed a higher prevalence of morbidity (82%) among under-five children. In this study, 38.8% of under-five children were fully immunized.65.1% of male children were fully immunized. BCG vaccination was given to 90.2% of children but vaccination coverage for measles was only 28.1%. These findings are similar to a study conducted by Sharma R et al.[18] where total immunization coverage was 25%, BCG vaccination coverage was 75% and measles vaccination coverage was 29.9%. This study also shows that the number of children of younger parents who were fully immunized was more than those of elder parents (mean age of fully immunized children's mother was 22.5±4.4 and fathers was 30±6.5). Majority of the fully immunized children parents had less number of children (mean number of children in family was 2.5±4.2). Lower aged children were fully immunized as compared to higher aged children (mean age of fully immunized children was 29±7 months). Among the fully immunized children, 73.5% of their fathers and and 34.9% of their mothers were educated. This is found to be consistent to a study conducted among 746 rural and urban migrant mothers with a child aged up to 2 years by Kusua YS el al.[14] It was also found that mother's age; educational status; the frequency of health care use; head of the family's education, job and salary were significantly associated with full immunization coverage. Banerjee J et al.[12] found that 43% of the mothers did not have the immunization card of their child, which is consistent with the present study.

CONCLUSION

In this study, we found that the overall health status of children aged between 1 to 60 months living in urban slums based on morbidity, immunization status and nutrition status as unhealthy. The most commonly morbidities observed were skin infection, cough, fever, pneumonia and diarrhoea. More than one third of children were under-weight, and under-weight was slightly more among male children. Majority of the children were not fully immunized, and immunization coverage was higher among boys. Safe drinking water, water supply, sanitation, hygiene, age of the child, mother's and father's education, mother's occupation and age, number of children in the family, usage of mosquito nets, type of household, family incomes were significantly associated with health status of the children.

Limitations

Morbidity status was based on self-reported signs and symptoms, which were not confirmed by clinical examinations or diagnostic tests. Immunization status might be under-reported, as the immunization card was used to verify immunization status in this study. Many of the parents could not produce the card at the time of data collection. Only weight for age was used to assess health status of children in this study. Several respondents refused to give written consent although they were ready to participate and gave verbal consent.

Recommendations

Health awareness activities regarding morbidity conditions like skin infection, fever, cough, pneumonia and diarrhoea are done through community health workers routine health check-up and strengthening immunization coverage in collaboration with the Government and private health sectors. Provision of health care should be made accessible for mobile and migrant slum population without any documentation. Provision of basic needs, adequate and safe drinking water supply, toilets, mosquito nets and shelter for healthy livelihood in the slums. Sanitation and hygiene practices in the slums should be improved, which are closely associated to child health.

Ethical Clearance- Taken from Institutional ethics committee

Source of Funding- Self

Conflict of Interest - Nil

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DOI Numher: 10.5958/0976-5506.2018.01341.4

Is Telemedicine Best Alternative to Reaching Last Mile: Investigation in the Context of Rural India

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ABSTRACT

Technology has played a role in the quality and assurance of life. Application of technology in the healthcare field has increased manifolds in past decade with the development of new devices and IT. Telemedicine – a technology for remote diagnosis of diseases provides health care facilities to the remote area. In the context of India, telemedicine can be an option to provide healthcare facilities to last mile, the interior villages with the help of technology. Although it is a conceptual paper, the paper investigates the enabler of telemedicine technology adoption and implementation and ends up with the proposed model with the constructs and constructs definitions with the proposed items which are useful for telemedicine implementation. Through the systematic literature review followed by one to one interaction with the physicians, patients and telemedicine experts who all are currently using the technology the propositions are made which are likely to affect the implementation and adoption of telemedicine technology. telemedicine is a useful technology, when it comes to the affordability, quality and reach of healthcare services in India. Private hospitals as well as government both have to work together to provide the better healthcare for better India.

Keywords: *Telemedicine; Healthcare; rural India.*

INTRODUCTION

Technology has always played an integral role in human social life. While some technology applications improved the standard of living, some other technology improved the very quality and assurance of life. Technology, rather application of technology in healthcare field have increased manifolds in the past decades with the development of IT infrastructure. Innovative technology applications in healthcare sector have to a large extent revolutionized healthcare delivery to patients across the globe. The field of telemedicine has gained considerable focus in this regard and has become a buzzword in the context of online and IT enabled healthcare delivery to the remote corners or the last mile healthcare service delivery foray and various practitioner and contemporary academic literature suggest that indeed it has been effective in saving lives.

But in a country like India where large chunk of population lives in rural areas and often remote areas as well, though the promise of telemedicine carries lots of ideology and prospect, but how effective it is actual scenario in reaching to the needs of the poverty-stricken village people in often infrastructure-starved villages, looms large as a big question. This study is aimed at carrying out separate exploratory studies regarding the intent of use of telemedicine, under what circumstances telemedicine in rural India is most effective, whether in private or public setup telemedicine works well and for what kind of diseases. Time saving and cost savings, both these aspects though often linked with practice of telemedicine, however use of this technology and its acceptance depends upon the complexity of diseases and

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complexity of technology. Use of the technology will increase only when the patients as well as the doctors accept it. This study tries to understand the perception of the grass-root level patients and their perception and intent of use and acceptance of telemedicine as an alternative to travelling far distances to nearby metros or large cities.. This paper describes in which situations telemedicine technology can be effectively used, what are the factors affecting the usefulness of the technology. The responses of doctors and patients are taken to know the intent of use of the technology.

LITERATURE REVIEW

Telemedicine is use of telecommunication technologies to provide medical information and services.[1] It is a digital platform which provides diagnosis as well as treatment of disease where the Expert or the Medical Practitioner can diagnose the disease and/or provide the medical help along with the prescription for the medicine.[4] Telemedicine technology enable these work from the remote location, so the expert can give the medical advice to the patient or client who are in remote locations and who could not reach the hospital in case of emergency.

In recent times Indian Healthcare Sector is fighting with the three major issues. And telemedicine has ability to resolve all the three major issues. Quality of care, Access to Care, Affordability to Care. Available WHO statistics shows that there are less than 1 physician per 1000 population and in India there are only 0.797 physician per 1000 population (WHO data 2016).

Telemedicine increases the speed of healthcare and medical services as Medical Experts as well as patients does not have to travel for long distance as the same work can be done from the remote location.[2,3] . By using the telemedicine one medical expert can reach more patients as compare to the traditional medical practices as well as medical experts can form the collaborative network to share their knowledge to provide the better healthcare.[1] Thus one expert can be accessible to more number of patients. On the other end, India is divided into Metro, Semi metro cities, towns and villages. Metro and Semi metro cities have good healthcare facilities in compare to towns and villages. So, the person who is living in a village or town must go to the metro and semi metro cities for good healthcare services. But exploitation of Information Communication technology for Health (ICT4H) can potentially bridge the gap between urban and rural healthcare.[5] Thus, telemedicine can provide the access to the quality healthcare services.

With the decrease in travel time and treatment quality as patient can take the healthcare services from the best in class medical experts who practices in urban area, telemedicine is also able to decrease the cost for treatment. [3] Hence, it is possible to provide affordable[10] and quality healthcare services to the village people, as well as to the urban people who are below the poverty line. With some mobile applications patient also have a flexibility to choose for a medical experts associated with the services and take the best in class healthcare treatment.

METHODOLOGY

The study follows a two stage methodology for initial model formation and conceptualization. For the conceptualization part, systematic review of relevant academic and practitioner literature have been done followed by in-depth scenario understanding through one-to-one discussions with few key stakeholders like physicians, patients, and technology experts. Systematic literature review has been followed by focused group discussion aiming at understanding the underlying practical linkages and subsequently followed by in depth interviews with semi structured questionnaires. Certain key aspects emerged out of as dominant enablers which hints towards providing key insight about the factors which can predominantly dominate the adoption and use of technology.

In the second phase due to dearth of enough empirical evidences, this study used a mix of two parallel techniques namely case-based modelling and q-sorting with industry experts as an alternative to pre-pilot and pilot studies. Through Q-sort technique[11] the study tried to incorporate an alternate investigative viewpoint using telemedicine implementation experts and physicians involved in similar fields. Through Q-sorting three aspects were closely monitored: Inter-rater reliability, Cohen's kappa and raw agreement scores and the study continued for three rounds with distinct sets of experts till all the three values above 0.9 were achieved. However since in q-sorting the subjective perspectives of the experts were only taken into consideration, we have substantiated our claim through development of two fact-based realistic cases in the context of already

running telemedicine projects in Indian context to add to the clarity and get a more nuanced understanding about the factors affecting telemedicine implementation and adoption. From the systematic literature review, semi structured focused group interview followed by Q-sort, and small case based propositions this study goes forward to put forth five key propositions which carry immense managerial and practitioner implications.

Case Study

While we were in the process of focused group discussion with the telemedicine technology experts, physicians and patients, we have made two distinct case studies which portrays in lucid manner how telemedicine facility can work, what are the facilities that are needed for a telemedicine center, and how well it can impact the adoption and implementation of telemedicine technology; thereby aiming at providing better healthcare services.

Case Study - I

A prominent Pan-India private healthcare service provider, with key multi-specialty chain hospital network spread across India, has developed telemedicine network and has been providing telemedicine services in almost all states of India, and nine overseas countries from their seven tertiary care facilities across the country. Patients have been evaluated from the distances ranging from 120 to 4500 miles. Facilities are available for tele-auscultation and for transmitting and viewing an echocardiogram live from a few centers. facility has custom-made Web-based software platform, which is used by many peripheral centers in the network, to transmit electrocardiograms (ECGs), images (x-ray films, computed tomography [CT] scans, ultrasound pictures, MRI and other reports.

In India where there is dearth of electricity and power outages are common, if due to some network or technical error web based live tele-consultancy process gets stuck up, this telemedicine service provider have designed process backups like transcript emailing and diagnosis mailing to avoid ambiguity and synchronize incomplete consultations. Even storage, retrieval and re-evaluation facilities are also provided to distant patients and concerned physicians from the quaternary care centers. All the teleconsultations are recorded and stored on a server. The facility uses broadband, ISDN line or VSAT (Very Small Aperture Terminal) for transmitting data, images, video, audio and provides a superior healthcare in the IOT environment (internet of things). All process level cross-checks prevent variability and enhances standardized care service delivery.

Case Study - II

The second case is in the context of rural telemedicine, service their rural outposts from metropolitan centers. This leading telemedicine service provider have been serving in rural India, from its metropolitan centers, using hub and spoke model for delivering better healthcare. The facility provides the training and motivates physician by lucrative incentives for telemedicine, as physician's involvement and motivation towards technology will leads to the adoption and implementation of telemedicine. The facility has a technology for video conferencing and transmitting, image, audio, video text towards both the ends. The facility also runs a short term course for the device operators who are working at quaternary care centers. The facility is in a process of developing the m-healthcare also, which uses 3G/4G mobile communication technology and android as well as iPhone application development for health related and consultancy related issues for the urban people, who cannot afford to be in a queue for the long time. The service provider in collaboration with one of the most prominent indigenous portable healthcare device manufacturer, through usage of mobile-mounted attachments have been trying to reduce time lag between clinical study, reporting and evaluation based diagnosis aiming at treatment time optimization and bolstering video calling or chatting with the medical experts for accurate the diagnosis and care delivery. These are aimed at enhancing the pervasiveness and standardized care delivery practice by prescription mailing to the patient with all the necessary reports generated by experts at telemedicine facility to increase trust building between technology, doctors and patients and trying to mimic the existing care delivery practices in brick and mortar setups.

Proposition development

As per Technology Acceptance Model (TAM),[8] when a user finds that it is easy to use the technology, which includes all the interfaces of technology than person shows the intention to use the technology and becomes technology savvy. As it is easy to use a technology for a tech savvy person, it is likely that person will use the

telemedicine technology.

P1 – Technology savviness will leads to the implementation of telemedicine

As telemedicine includes use of a telecommunication technology[2] for healthcare services, the physical interaction between physician – patient is not mandatory[9], but diagnosis can be done remotely by a doctor.

P2 – Telemedicine implantation will leads to the remote testing diagnosis

Patient can consult for one or more doctors or take the second opinion from the other doctors for the medical condition, and have a swift access to the doctors[10], as web based application is used.[7]

P3 – Telemedicine implementation will leads to the choice flexibility

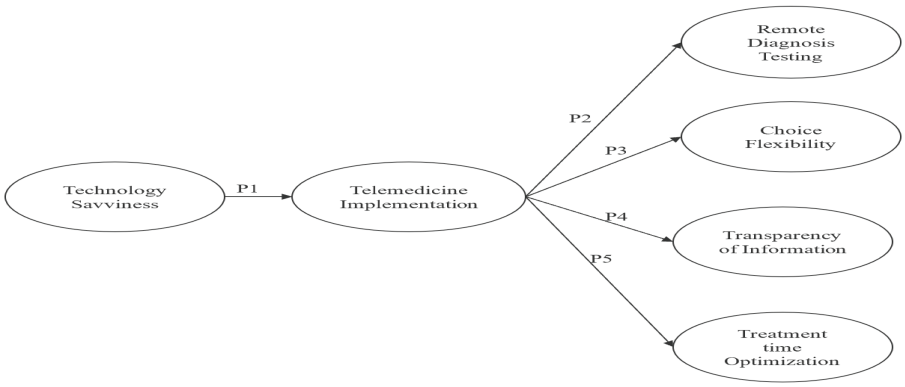
Reports and medical records are the personalized documents and cannot be given to the unauthorized person for access.[6] On the other end, patient must have the access of own reports. With the implementation of telemedicine, information transparency is created, as web based applications are used.

P4 – Telemedicine implementation will leads to the information pervasiveness

As telemedicine enables remote diagnosis, patient does not have to wait in a long que at doctors' clinic. Rather from the application patient can consult a doctor online. Which leads to lower the treatment time without hampering the treatment accuracy.[3]

P5 – telemedicine implementation will leads to the treatment time optimization

Research Model



Outcome of study

The major contribution of this paper is to identify the constructs which can act as an enablers for the adoption of telemedicine technology. and based on Q-Sort, we have defined construct definitions and proposed indicators which are likely to affect the adoption of technology.

Choice flexibility can be defined as an extent to which patient can have a swift access to the medical expert for having an opinion and advice to better manage the medical conditions. Which indicates that patient has a choice to select one or more doctors (consultation as well as second opinion) for the healthcare services irrespective of time.[7]

Treatment time optimization is defined as an extent to which interaction time between doctor – patient is untouched with decrease in ravel time. As doctors and patients don't have to contact physically as remote diagnostics is there, proper treatment can be given to the more patient in the same time in compare with the traditional practices as travelling time can be eliminated.[5,3]

Transparency of information is an extent to which the record of patient data is shared with the patient using a secure gateway. As patient has a right to see the nature of treatment given and all other reports related to the health. Report sharing also increases the patient's responsibility and awareness towards health as patient is responsible for own health.[6]

Remote diagnosis testing can be defined as an extent to which diagnosis can be done by using technology, tools and media from a distant place. As patient – doctor both can use the web based application for the diagnosis

and other healthcare services both does not have to travel along the long distance for getting healthcare services.[2,5,7]

Implications

Managerial Implications

For implementation of telemedicine hospital management must invest on it, as telemedicine is able to provide high returns on investment as only one time technology cost is there, but after implementation more patients can be handled swiftly which increases the patient's satisfaction. For the constraints related to technology Indian Space Research Organization (ISRO) has already launched a satellite, for an exclusive use of telemedicine and healthcare technology, which can has a wide reach and range of connectivity. Hospital management also supports the training program for the telemedicine operations for doctors and telemedicine operators, as training can motivates the usefulness, adoption and implementation of technology.

Society at large

Government should also take the initiatives and make a telemedicine center at government hospitals in a metropolitan city, on the other end, primary healthcare center or "Aanganwadi" in the villages should be made as a teleconsultation program – which is connected with one or other hospitals with government as well as private telemedicine set up. Which can provide the access to healthcare on an affordable basis to the large population.

Academic Implications

Researchers and scholars can remove the technological as well as managerial constraints which are hurdle in the implementation and adoption of technology. moreover, how to enhance the reach and adoption for telemedicine especially in India, as India is a country with wide variety of geography, psychology (of people) and interior villages where reach is an issue. Moreover, in which disease condition and for which disease how telemedicine technology can be used effectively and efficiently is an area for research.

Future Scope

Scope of converting the proposition into testable hypotheses to be tested empirically.

Ethical Clearance:

As it is management study and no experimentation done in the laboratory no ethical clearance needed

Source of Funding: Self

Conflict of Interest: Nil

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DOI Numher: 10.5958/0976-5506.2018.01342.6

Improvement of Job Engagement after doing Team Job Crafting in Human Resource Management of Hospital

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ABSTRACT

Job crafting is becoming popular in term of job design in human resource management. Employees involved in crafting behaviors can change the number, methods, or form of jobs (task changes), how they consider their jobs (cognitive changes), and how they interact with people related to their work (relational boundary changes). Team job crafting is a collective process about what to craft at work and how in order to achieve mutual goals. This paper is a case study conducted at Airlangga University Teaching Hospital to know whether team job crafting may affect job engagement level. The intervention has been performed since January 2017. Job engagement level is measured using (Utrecht Work Engagement Scale) UWES questionnaire. The UWES score is measured before and after interventions and then analyzed statistically. After doing team job crafting, there are significant improvements in job engagement level. Total score of UWES in 2017 is significantly higher compared to 2016 ($p<0,00$; CI = 95%). All aspects of job engagement are also improved significantly. Improvement of job engagement after doing team job crafting is linear with what is expressed in much previous research. In term of task changes, the members of the team may change the way of work and work behavior that suitable not only their desire but also others. In term of cognitive changes, there is shifting on the perspective of work linkage. Every worker sees work no longer merely as an individual job, but also within a team. In relational boundaries, changes in attitude of each individual affecting the work atmosphere became more comfortable. Team job crafting is proven may increase the job engagement of staff. Further research should be made in larger scale in order to make a firm conclusion.

Keyword(s): *job engagement, job crafting, team, hospital, human resource management*

INTRODUCTION

Job crafting is becoming popular in term of job design in human resource management. The first conceptual of job crafting was written by Wrzesniewski and Dutton [(1)]. Employees involved in crafting behaviors can change the number, methods, or form of jobs (task changes), how they consider their jobs (cognitive changes), and how they interact with people related to their work (relational boundary changes) [(1–3)]. Employees who change any one of these aspects can modify the job design and the social environment in which they work [(1,4)]

Job crafting can increase job engagement thus increasing work performance [(5–7)] . The level of job engagement is known correlated with work performance. Higher job engagement can motivate the staff to make improvement of overall performance [(8,9)]. A meta-analysis conducted by Rudolph *et al*. in 2017 shows that job crafting is useful in increasing work performance, including in healthcare area [(2)].

Leana et al. (2009) stated that job crafting can be categorized into two classifications: individual job crafting and collaborative job crafting [(10,11)]. Individual job crafting refers to a person who plays actively in modifying their task and shaping the fitness of his/

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her work practice. Collaborative or team job crafting defined as employees who jointly make an effort to determine how to change the task boundaries to fulfill their shared work goals. Team job crafting is a collective process about what to craft at work and how in order to achieve mutual goals [11–13]. Team job crafting requires interaction between team members but is more than simply discussing and setting the team's daily work agenda [2,13]. This changing of job characteristics is a bottom-up process, where employees themselves, not management, decide as a team which features of their job they would like to modify [13].

The evidence shows that performance of an organization depends on the level of employee engagement [8,9,14]. By using UWES questionnaire of job engagement, it was shown that the engaged status in 2016 in National Insurance Casemix Unit is only 18% of members with average score 59,7. When an employee is engaged they work better and therefore contribute more to the organization's ongoing profitability [8,10,15]. Therefore, it was assumed that the low performance caused by the low job engagement.

METHOD AND MATERIALS

This paper is a case study conducted at the National Insurance Case Mix Unit in Teaching Hospital of Airlangga University, Indonesia. The human resource in the unit consists of multi professions: coder, administrator claim, finance staff, and medical doctor.

The hypothesis of this study is team job crafting may affect the job performance level. The job redesign was performed using team job crafting by creating task changes, cognitive changes, and relational boundaries improvement. After doing a transfer of target, all of the processes were a bottom-up approach. All members were elaborating to decide which job will be the responsibility of whom. The whole systems in work were also changed through mutual agreement. The mindset of all members was changed from a passive worker into an active worker. The cognitive aspects were also changed by doing a weekly report of the unit instead of usual monthly report. The unit can also suggest things they think should be improved to make relational boundaries improved, such as the employee of the month program by themselves and also doing outbound.

Job engagement level was measured using UWES questionnaire. Measurement of job performance in this research is done by using UWES (Utrecht Work Engagement Scale) compiled and used first by Schaufeli (2002). UWES is the most common questionnaire tool used by researchers around to measurement the job engagement level. Questionnaire consists of 17 questions followed by score ranged from 1 (very unimportant) until 6 (very important). In the questionnaire sheet there is the identity of the respondent, such as: name, age, gender, education last, and length of work. The UWES questionnaire has 17 questions be marked with three aspects, including: vigor (6 question), dedication (5 question), absorption (6 questions), with answer choices very unimportant, unimportant, rather unimportant, rather important, important and very important with a score of 1 until 6. After the questionnaire is filled, the score from each question will be accumulated.

The instrument used on research uses (Utrecth Work Engagement Scale) UWES questionnaires to measure work engagement score on human resources in the unit. This scale is annually done by the hospital to know the engagement level of staff. The results of this test are compared between 2016 and 2017. Based on reliability test results with alpha cronbach with SPSS studies Titien (2016), indicating that level corrected item-total correlation shows ranges from 0.430 to 0.848 with reliability coefficient of 0.934. Reliability coefficient value it shows that work engagement score has good homogenecity. Since the intervention was performed in January 2017, the data from July 2016 – December 2016 is compared to the data from January 2017 – December 2017.

RESULTS AND DISCUSSION

After doing team job crafting, there are improvements in job engagement level. Total score of UWES in 2017 is significantly higher compared to 2016 ($p<0,00$; CI = 95%). In 2016, average score 50.9 (33 - 64) and was a obtained significant increase in 2017 with average score 81.1 (77 - 84). The detail results of UWES is shown in Table 1. Three aspects of UWES are increased significantly: vigor, dedication, and absorption.

Table 1. UWES result before and after intervention

Scale	Before	After	p value
Job Engagement	50,9 (33 – 64 ± 7,95)	81,1 (77 – 84 ± 2,34)	0,000
Vigor	16,9 (9 – 22 ± 3,53)	28,1 (24 – 33 ± 2,62)	0,000
Dedication	15,2 (9 – 20 ± 3,28)	23,3 (22 – 25 ± 1,12)	0,000
Absorption	18,7 (14 – 27 ± 3,79)	29,6 (27 – 34 ± 1,91)	0,000

The term of team job crafting is defined as proactive behavior through which team members change their work environment by jointly shaping the team's job resources and job demands [13,17]. In this study, team job crafting was performed by creating task changes, cognitive changes, and relational boundaries improvement. The changes were made by staff proposal based on daily experience.

According to Lyubovnikova et al. (2015), the team is when members share clear objectives in doing work/task. The team members also work interdependently, in this study the claim verification result is a multidisciplinary product that includes targets for each individual [13,18]. Consequently, the target of the teamwork is a product of professional skills across different disciplines and is thus shared. Teams moreover reflect regularly on the effectiveness of their work and continuously update their way of working on the basis of feedback collected after every process of claim series. Second, owing to their daily meetings, they provide an exceptional opportunity to investigate real team processes, such as team job crafting, on a daily basis.

Improvement of job engagement after doing team job crafting is linear with what is expressed in much previous research [6,10,19]. In term of task changes, firstly each member in unit identifies the work that has to be completed each day. Then as a team, they tried to develop methods that suggested to be implemented. Based on mutual agreement, the method of work was also modified based on teamwork perspective. In addition, the unit also proposes to create new rooms in order to support changes in the flow of their work. Job crafting can make a staff more involved in decision-making related to his work. They may change the way of work and work behavior that suitable not only their desire but also others. So that team interactions can be sustain and continuous adjustment from one another may happen continuously.

Teams who actively craft their jobs and shape their work environment are seeking to acquire new job resources that will enable them to cope better with their job demands and achieve their shared objectives. Research has provided sound evidence of the benefits of team job crafting, relating not only to positive employee attitudes to work but also to improved team efficacy and interdependence and increased levels of work engagement and performance [11,13,17]. There is also recent evidence that, in contrast to individual job crafting, shared job crafting among team members increased their team's performance [12,20].

In term of cognitive changes, there is shifting on the perspective of work linkage. Every worker sees work no longer merely as an individual job, but also within a team. Each team member is responsible for the performance of each, but the KPI of the unit must also be achieved. In the case of training needs, all are determined by the team. Every worker also made a change of mindset from previous passive workers in the sense of waiting for work, becoming active workers. Active workers, in this case, can also exercise control over the results of other workers that he does interaction of daily work. That way, there are continuous improvements between jobs with each other.

Improvement also occurs in relational boundaries, ie changes in attitude of each individual affecting the work atmosphere becomes more comfortable. Each worker also feels the job is more interesting because the interaction within the team gets better so that it can decrease the level of boredom of the employee. In addition, they also awarded employee of the month for the elected team member by their own. The criteria include discipline, friendliness to others, politeness, and well manner. This can further increase work motivation which ultimately increases job engagement.

Along with job engagement improvement, each team member actively volunteered to conduct a study

related to the constraints of work and its solution alternatives. Each team member then performs a job crafting if it is found that must be adjusted to the work, cognitive or relational that has been experienced. This process is performed daily. So that work performance can be increased and achieved well.

CONCLUSION

Team job crafting is proven may increase the job engagement of staff. Regarding the results, this method must be implemented widely across all units and departments in the hospital and may become the new trend in hospital management of human resource. Further research should be made in larger scale in order to make a firm conclusion of this intervention.

Ethical Approval: Related departments should be assured about the confidentiality of the results of questionnaires

Conflict of Interest: The authors report no conflict of interest.

Source of Funding: Self

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DOI Numher: 10.5958/0976-5506.2018.01343.8

Awareness about the Management of Avulsed Tooth among Medical Interns in Mangalore, India

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ABSTRACT

Aim & Objectives: Early management of the avulsed tooth is the key factor for the better prognosis, their knowledge of management of avulsed tooth is important. Hence the present study was conducted to evaluate the awareness among the medical interns regarding management of avulsed tooth.

Materials and Method: The study was conducted among three medical colleges in Mangalore city, Dakshina Kannada, Karnataka. The study design was of cross-sectional type and descriptive. The questionnaire regarding awareness about the management of Avulsed tooth were given to medical interns from the three medical colleges in Mangalore city.

Results: 300 medical interns participated in the study. It was concluded that majority of the medical interns, their knowledge regarding emergency management of dental trauma was poor. Therefore, orientation to manage the avulsed teeth should be part of the medical training education.

Conclusion: The present study stresses on necessity of recommending, that medical interns and physicians in hospitals' emergency rooms should be made aware of their possible role in cases of avulsion of permanent teeth, in order to minimize the late complications associated with such injuries. One possible way to achieve this goal is through education during and after training and introduction of a formal protocol for treatment of avulsed permanent teeth and other dental injuries.

Keywords: *Avulsion, medical interns, traumatic injuries*

INTRODUCTION

Most of the dental trauma occurs in adolescents due to playground accidents, domestic violence, bicycle and motor vehicle accidents and sports injuries. These traumatic injuries may create significant impact on the quality of life since it causes both physical and psychological trauma. These dental injuries may result in intrusion, extrusion, avulsion, luxation, subluxation and fracture of the tooth. Among all these dental injuries tooth avulsion comprises 0.5%–16% and 7%–13% in the permanent dentition and in the primary dentition respectively.[1, 2, 3, 4]

Tooth avulsion is the complete displacement of a tooth from its socket in alveolar bone owing to trauma. Tooth avulsion results in separation of the tooth from the dentoalveolar socket and tearing of the periodontal ligament, leaving viable periodontal ligament (PDL) cells on the root surface.[5] If the PDL attachment does not dehydrate, the cells will not undergo severe inflammatory response and allow replantation therefore it is imperative to keep these cells hydrated so that these cells remain

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vital and reattach to bone on replantation.[1,6,7] The storage media required to maintain the viability of the cells are Hank's balanced salt solution, milk, saliva, vestibule of the mouth or container with the patient's saliva, normal saline or water in the order of preference.[1,2,8,9] Earlier the avulsed tooth is replanted into the alveolar socket, favorable will be the outcome. Therefore every effort should be made to replant the tooth within the first 15-30 minutes.[1, 9]

During internship medical interns are posted to health centers where they have to handle emergencies independently. As early management of the avulsed tooth is the key factor for the better prognosis, their knowledge on management of avulsed tooth is important. Hence the present study was planned to evaluate the awareness among the medical interns regarding management of avulsed tooth.

AIM

Awareness on the management of avulsed tooth among medical interns of medical colleges in Mangalore city, India

MATERIALS AND METHOD

The cross- sectional study was conducted among the medical interns of 3 medical colleges in Mangalore city after obtaining the ethical clearance from the Institutional Ethics and research committee. Informed consent was obtained from all the participants and strict confidentiality was assured to the participants and maintained throughout the study process. The total sample size was 300 interns (male=126, female=174) which represented all mentioned 3 medical colleges. A validated questionnaire was used which consisted of 9 close ended questions, divided into two parts. The first part included questions on demographic data including gender, age. The second part consisted of 9 questions to assess the knowledge and attitude of medical interns on management of avulsed tooth. Data collected from the questionnaire were coded and analyzed using SPSS 14.0 and distribution of the variables were given in frequencies and percentages to evaluate the knowledge related to avulsion management among the medical interns. Description of variables- The marking scheme was tabulated. 1 mark was given for a correct answer, 0 for "Do not know/Not sure". There were multiple answers for Question 8 so 1 mark was given to any of the correct answers chosen.

RESULTS

Three hundred Medical interns who consented to participate were distributed with the questionnaires. The completed questionnaires were collected back on the same day. Results showed that only 8% of the participants had come across with tooth avulsion. (Fig.1) 70% of the participants had an opinion that avulsion to be considered as an emergency. (Fig.1) 26% of the participants do not know about what to recommend to the parents of the children with avulsed tooth on contact. Around 56% of the participants would suggest the parents to collect the tooth and wrap in a clean of gauze piece / handkerchief. Small percentage would recommend to place the avulsed tooth in milk and in the mouth and seek dentist's consultation. (Fig.1) 82% of the participants expressed that they would not replace the avulsed tooth back into socket and only 18% of participants expressed that they would replace the avulsed tooth back into socket (Fig. 1).Among those who would replace the tooth into socket, 77% felt the need to wash it with normal saline before placing into the socket and 23% would not. (Fig.2) Among the participants who expressed that they would not replace the avulsed tooth back into socket, 53% would wrap it with gauze, the rest would place it in ice (20%), container(25%) or in vestibule(2%). (Fig.2)

Majority of the participants preferred normal saline (49%) followed by milk(23%), HBSS(20%), water(6%) and last preference was saliva(2%), as transport medium to transfer the avulsed tooth. (Fig.2) .Only 14% of the participants felt that avulsed tooth replantation should be carried out within 15mins of avulsion time, while majority were not known with fact of replacement time. (Fig 2)

FIGURE LEGENDS 1

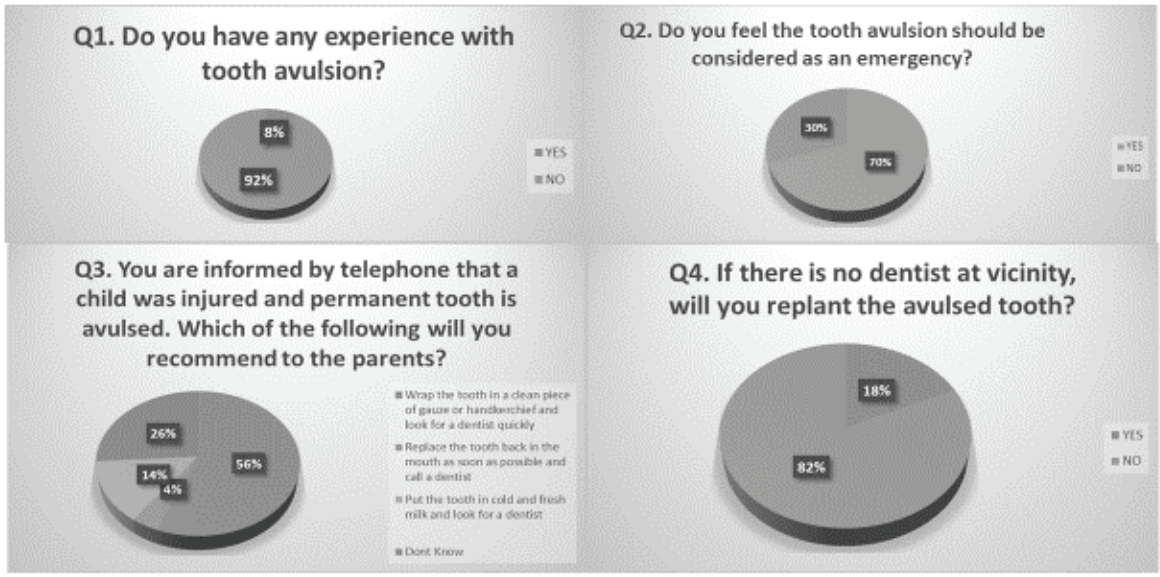
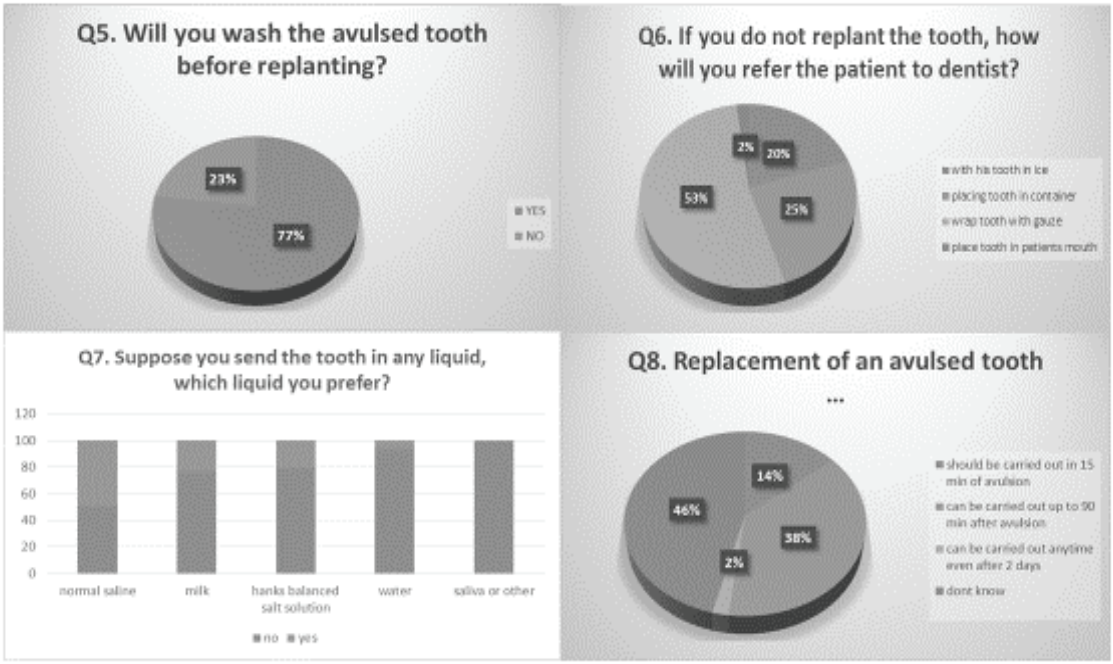


FIGURE LEGENDS 2



DISCUSSION

Since medical professionals handle dental traumatic injuries along with other injuries in any accident cases or road traffic accident, in any hospital or primary health centers before the dental professional, there is dire need of knowledge and skill to handle dental injuries by medical professional in emergency situation. In the present study only 8% of the participants who belong to medical profession have experienced tooth avulsion in contrary to previous study reported that almost 75% of the subjects had experienced at least one event of trauma.[10] Since participants were interns in the future they may have to handle many dental injuries as a part of medical injury. Hence the present study was planned

to evaluate the knowledge of dental avulsion amongst them at baseline. Most of them (70%) were aware that dental avulsion is an emergency but they had lack of knowledge to manage the cases. Around 56% of the participants would prefer to send them to dentist instead of handling the case and only 4% knew that they have to replace back in the mouth. 82% of the participants had no confidence to place back tooth into the socket. Previous study by Diaz *et al*. reported that almost 25% of the subjects did not identify appropriate clinical procedure prior to replantation. [10] None of the participants had the knowledge regarding the method of transporting the avulsed tooth while referring to the dentist. When given a choice 56% of participants felt normal saline is best medium for the transport of avulsed tooth. Previous study by Sae Lim et al. reported that 13.2% of the subjects answered that best transport media was saliva. 40% said that they would prefer milk as storage media.[11] Another study reported that milk was the most preferred storage media. [10] Around 46% of participants had no knowledge about replantation time of the avulsed tooth. Only 14% of the participants had knowledge regarding the time lapse of replacement. According to many previous studies there is not much of awareness regarding the immediate replantation of avulsed tooth among medical professionals. A recent study reported that only 4% of the physicians thought that replantation of avulsed tooth is possible.[4] Another study reported that 2.9% of the subjects had preferred replantation.[12] Diaz *et al*. reported that 43.9% would not replant for perceived high risk of infection. [10] The previous study reported that, only 10% of subjects were in favor of immediate replantation of avulsed teeth and among the nondentist, it was 4.6%.[12] Another study reported that almost 50% of the subjects were not in favor of replantation of avulsed tooth. [10] Numerous previous studies reported that participants never received the information on management of dental trauma especially concerning dental avulsion during undergraduate days. Dental injuries usually tend to be neglected by the non-dental professionals. [10] Hence, it is very crucial for the medical graduates to have fundamental knowledge regarding dental trauma management.

The findings of this study indicate that there is less awareness regarding emergency management of dental trauma among medical graduates of Mangalore city. This is detrimental for the prognosis of traumatized teeth. Hence, it is recommended to include management of dental emergencies in medical curriculum or to make the dentist to be a part of the emergency team.

CONCLUSION

The findings of the present study indicate that the awareness of emergency immediate dental trauma management is low. It is also observed that few of the measures preferred by the medical graduates for the management of traumatic injuries were detrimental to dental health. With a basic knowledge of the factors affecting the prognosis of traumatized tooth, the medical professional would be able to significantly contribute to successful treatment of the tooth. Thus, there is an urgent need to include the basics aspects of dental traumatology as a part of medical curriculum.

Conflict of Interest: None

Source of Funding: Self

Ethical Clearance: Institutional Ethics Committee, Manipal College of Dental Sciences, (Manipal Academy Higher Education), Reference No14038

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DOI Numher: 10.5958/0976-5506.2018.01344.X

A Comparative Evaluation of Stress Distribution between Conventional and Platform Switched Implant Supported Crown in Different Densities of Bone: A Three Dimensional Finite Element Analysis

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ABSTRACT

Purpose: To analyze and compare the stress distribution in 3D FEA models of Implant supported mandibular crown in different densities of bone with platform switched abutment and another with a conventional matching diameter abutment.

Material and Method: Eight finite element models of different densities of bone with conventional and platform switched implants were prepared and subjected to axial and oblique loading. Average von Mises stress values were evaluated quantitatively and qualitatively.

Results: Maximum stress for the cortical bone were noticed in the D4 bone followed by D3,D2 and D1 bone. There was no significant difference between the stress values of cortical bone and cancellous bone

Conclusion: Within limitation of this study greater stress was generated in cortical bone and in implant abutment complex in platform switched implants

Keywords : *platform switching, implant , density*

INTRODUCTION

Development of an ideal substitute for missing teeth has been one of the long-term aims of dentistry[1]. Introduction of osseointegrated implants has conveyed a new era of oral rehabilitation for both the completely and partially edentulous patients[2, 3].

Even though the success rate of implants have been very high, implant failure do occur[2]. The peri-implant bone level has been used as one of the criteria to assess the success of dental implants[4]. Bone loss usually begins at the crestal area of the cortical bone and can progress toward the apical region, jeopardizing the health of the implant itself, as well as the supported prosthesis[5]. The causes of marginal bone loss are complex, with a combination of mechanical and biologic factors contributing to crestal bone loss[6]. It includes a traumatic surgical technique, loading conditions in relation to the quality and quantity of the surrounding bone, the location, shape, and size of the implant abutment microgap and its microbial contamination, the biologic width and soft tissue considerations, a peri-implant inflammatory infiltrate, micromovements of the implant and prosthetic components, repeated screwing and unscrewing, the

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implant-neck geometry and the infectious process[4,7].

Over the years, attempts have been made to reduce or prevent marginal bone loss through modification of the implant-abutment connection[6]. It has been reported that platform switching seems to reduce or eliminate the expected post restoration crestal bone remodeling[5]. Platform switching concept explains the use of a smaller-diameter abutment on a larger-diameter implant collar. This connection shifts the perimeter of the implant-abutment junction (IAJ) inward toward the central axis (i.e. the middle) of the implant.

Finite element analysis (FEA) has become an increasingly useful tool for the prediction of the effects of stress in the contact area of the implants with cortical bone and around the apex of the implants in trabecular bone.[7]

This study aims at to analyze and compare the stress distribution in 3D FEA models of Implant supported mandibular crown in different densities of bone with platform switched abutment and another with a conventional matching diameter abutment.

MATERIAL AND METHOD

Following approval from the Institutional ethical committee of the Manipal college of dental sciences, Mangalore the study was conducted in the Department of Aeronautical and automobile engineering, M.I.T, Manipal .

Armamentarium:-

CT scan of edentulous mandible. (Department of Oral medicine and Radiology), MCODS, Mangalore.

Tapered threaded internal hex implant (4.2 x 10mm) MIS Implant Technologies Limited, ISRAEL).

Standard abutment - 4.2mm; MIS Implant Technologies Limited, ISRAEL.

Platform switched abutment - 3.75mm; MIS Implant Technologies Limited, ISRAEL.

Metzer the Profile Projector (METZ- 801).

ANSYS – 11.0 Workbench Software.

Nickel –chromium alloy. (Wirolloy NB Bego, Germany).

Feldspathic porcelain. (VITA VMK Master, Germany)

The implant & abutment that were evaluated were as follows:-

Model A: - Tapered threaded internal hex implant (MIS Implant Technologies Limited, ISRAEL.) with conventional abutment.

Length=10 mm.

Diameter=4.2mm.

Abutment- 4.2mm.

Four models were representative of this group in different densities of bone i.e. D1, D2, D3, D4 **MODEL - B: -** A Tapered threaded internal hex implant (MIS Implant Technologies Limited, ISRAEL) with platform switched abutment.

Implant Length - 10mm.

Implant Diameter - 4.2 mm.

Abutment diameter - 3.75mm.

Four models represented this group

An axial and an oblique load (30 degrees in relation to the longitudinal axis of the implant, from lingual to buccal) of 150N was applied on occlusal surface of the prosthetic crown was applied to simulate the masticatory loading. The loading was performed on a personal computer using ANSYS software 11.0. The von Mises stresses were used as the key indicators to analyse the stress levels and to evaluate the stress distribution in the prosthesis, abutment, implant, and peri implant area as this stress value summarize the overall stress rate at a point in the finite element model.

RESULTS

The von Mises stress (equivalent stress) values were only considered as they summarize the effect of all the six stress components with a unique value. The maximum von Mises stress were calculated in the model A and model B under axial and oblique loading in the prosthesis, abutment, implant and the peri implant tissue in different densities of bone i.e. D1, D2, D3 and D4.The magnitude of the stress in the two models is depicted in the Table 1 and 2.

When the peri implant bone tissue was analyzed cortical bone exhibited higher stress than the cancellous bone in all models and both the loading situations. Under oblique loading, higher intensity and greater distribution of stress were observed versus axial loading.

The results of the numerical analysis are shown in Table 1 and 2

For cortical bone, under the oblique loading the maximum von Mises stress were found in the D1 bone followed by D4, D3 and D2 bone density in both the models. The stress value of D1 was 1.5 times greater than D2 bone and 1.2 times greater than D3, D4 bone. The Model BD1 showed more stress than AD1 bone. In contrast to D1, it was noted that BD2, BD3, BD4 developed almost 1 Mpa lower stress than AD2, AD3 and AD4 bone. It was although not statistically significant but may influence later the clinical outcome.

Results for cortical bone in oblique loading implies that conventional abutment (Model A) will be more favorable in D1 bone and platform switched abutment (Model B) in D2, D3 and D4 bone in terms of stress reduction.

Under axial loading maximum von Mises stresses were found in D4 bone followed by D3, D2 and D1 bone in the Model A and B. It designates that the maximum stress values for the cortical bone increased with reduced bone quality in particular for D4 bone due to thin cortical layer inducing high stress concentration.

For cancellous bone the maximum von Mises stress were found in the D3 and D4 bone ,with minimum stress values in the D2 bone respectively. The stress values were almost similar for BD3, BD4 and AD3, AD4 bone models under both the loading conditions. The equivalent stress for BD2 was higher than the AD2.

Stress distribution in implant

When the stress distribution at the implant was compared for both the models, it was apparent that Model B exhibited lesser stress concentration than Model A in all the densities of bone under axial as well as oblique loading condition. The stress was located at the implant neck and also on the outer edge of prosthetic platform at cortical bone level.

In implant the maximum von Mises stress were found in the oblique loading situation especially in D1 bone followed by D2, D3 and D4 bone respectively. The von Mises stresses were less in the model B, with stress reduction of 11% in BD1 , 23% in BD2, 27% in BD3 AND 26% in BD4 as compared to AD1, AD2, AD3 and AD4 bone models.

Under axial load the model B showed low stress values in the implant as compared to the model A. The amount of stress reduction was 37.2% in BD1, 18% in BD2,13% in BD3 and 5% in BD4.

Stress distribution in the abutment :-

For both the models, under axial loading the stress in the abutment was found to be located in the most coronal and medial portion of the abutment. Under oblique loading, regardless of the model the stress appeared in the well delineated area that extend from middle to the apical portion of the abutment. The maximum von Mises stresses in the abutment were seen under oblique loading in the D1 bone, followed by D3 and D4 bone. Minimum stress in abutment was noted in the D2 bone.

Von Mises stresses in the abutment of Model B (platform switched) were lower than those seen in the abutment of Model A (conventional model) for both the loading conditions. The reduction of stress in the abutment with Model B versus Model A was 19.6% for BD1, 20.5% for BD2, 15.5% for BD3, 16.1% for BD4 bone.

Under the axial loading also there was a reduction in the von Mises stress values of the abutment in all the densities of bone for the model B. The stress values were decreased by 25% in BD1, 32% in BD2, 35% in BD3 and BD4.

Stress distribution in prosthesis:

In the prosthesis, maximum von Mises stress were located at the point of load application on the occlusal surface in both the models under both loading conditions. Comparing the von Mises stress in the different densities of bone the Model B shows greater values of stress than Model A.

The maximum stress values were seen with oblique loading in D2 bone, followed by D1, D3 and D4 bone. The increase in the stress values in the prosthesis for model B was 55% in D2, 38% in D1 bone and 36% in D3 and D4 bone respectively.

Under axial load the model A exhibited almost similar values in AD1, AD2, AD3 and AD4 bone model prosthesis .In the model B maximum von Mises stresses were seen in BD1 and BD2 with minimum stress values in the BD3 and BD4. But all the stress values were greater in the model B as compared to the Model A. The extent of stress intensification in the model B was 58% in BD1 and BD2. 50% in the BD3 and BD4,

It implies that Model B shifts the stress from bone implant complex towards the prosthesis. This shift of stress was more pronounced with in D2 and D1 followed by D3 and D4 bone quality.

Table 1. Maximum von mises stress in different components of Model A in different bone qualities and loading angles

Maximum von mises stress (Mpa) in different components of MODEL A in different bone qualities and different loading angles.								
MODEL A								
Densities	D1		D2		D3		D4	
Loading angle	0°	30°	0°	30°	0°	30°	0°	30°
Prosthesis	134.14	164.85	134.15	164.86	134.14	164.86	134.14	164.86
Abutment	60.68	608.68	56.74	297.33	57.72	319.21	57.47	329.81
Implant	43.57	205.98	37.83	221.97	38.11	217.21	38.60	216.33
Cortical bone	6.26	95.60	17.43	66.75	21.59	77.68	23.85	80.20
Cancellous bone	NA	NA	3.83	6.80	4.63	8.05	4.42	7.90

Table 2. Maximum von mises stress in different components of Model A in different bone qualities and loading angles

Maximum von mises stress (Mpa) in different components of MODEL B in different bone qualities and different loading angles.								
MODEL B								
Densities	D1		D2		D3		D4	
Loading angle	0°	30°	0°	30°	0°	30°	0°	30°
Prosthesis	321.10	267.21	321.10	367.20	273.39	259.70	273.39	259.70
Abutment	133.78	485.80	38.03	236.42	37.88	269.60	37.81	276.68
Implant	27.17	217.87	30.35	169.26	33.88	160.33	36.76	160.63
Cortical bone	6.50	100.57	17.64	65.46	22.40	76.52	24.70	79.71
Cancellous bone	NA	NA	4.13	7.23	4.46	7.10	4.17	7.88

DISCUSSION

The results of this study, revealed that in the cortical bone, D4 bone density exhibited the highest value of stress followed byD3, D2 and D1 bone for axial loading in both the models. But there was no significant difference between stress values of the cortical bone for the model A and B. The results were consistent with studies done by Pessoa et al who concluded that the reduction in abutment diameter presented a minimum effect on cortical bone junction.[10] Also Pellizer et al in (2012) through 3D FEA, concluded that the platform switching and conventional abutment exhibited similar stress intensity.[6]

Comparing the stress values in different densities of bone, the maximum stress under axial load was found in the D4 followed D3, D2, D1. This finding is in agreement with studies done by Sevimay et al and almedia et al which displayed an increase in the stress values as the bone density decreases. Sevimay et al (2005) investigated the four bone qualities for stress concentrations in an implant-supported crown and found that stress magnitudes were greatest for D3 and D4 bone[11]. Also Almedia et al (2010) has found the similar results in their 3D FEA for the Edentulous mandibles with different bone types supporting multiple-implant superstructures[12] But in oblique loading the maximum stress was located in D1 bone quality followed by D4, D3 and D2 bone for both the models.

When the values were compared in all the qualities of bone for model A and B under both the loading situation, axial load showed highest stress values in the prosthesis and the abutment followed by implant for both the models.

A possible reason for the lower stress in the prosthesis abutment complex of Model A may be greater diameter of abutment which distribute the loads better as a result of increased contact area between abutment and implant.

Considering the loads, the oblique component revealed higher stress in all the components for the both the models as it was also demonstrated by other studies done by H S chang et al(2013) that reported the highest stress concentration with lateral loads.[13]

Thus present study implies that , dental implants with a platform-switched abutment expressed better stress distributions than conventional abutment in cortical bone, implant and abutment under axial as well as oblique loading for all the densities of bone. To achieve favorable success rates or survival rates of dental implant treatment, careful selection of the implant abutment connection combined with ideal bone quality and a proper loading protocol are strongly suggested to minimize the destructive influence of loading forces on the surrounding bone of a dental implant.

CONCLUSION

1. Under axial loading for the model A (conventional model) the maximum vonmises stress for the cortical bone were noticed in the D4 bone followed by D3,D2 and D1 bone. Among the different components of the model A the maximum stress concentration was showed by prosthesis and abutment in all the densities of bone.

2. There was no significant difference between the stress values of cortical bone and cancellous bone for the Model A and B under both the loading conditions.

3. Under oblique loading the model A showed maximum stress in D1 bone followed by D4, D3 and D2 bone. In all the densities of bone maximum stress absorption was seen in implant and the abutment for the model A among the different components of the model.

4. Under axial loading for the model B, the maximum vonmises stress for the cortical bone were noticed in the D4 bone followed by D3, D2 and D1 bone. Among the different components of the model B the maximum stress concentration was showed by prosthesis and abutment in all the densities of bone.

5. Under oblique loading the model b showed maximum stress in D1 bone followed by D4, D3 and D2 bone. In all the densities of bone maximum stress absorption was seen in abutment and the prosthesis for the model B among the different components of the model.

6. Under axial loading the amount of stress shifted in the abutment prosthesis complex was more in the Model B as compared to model A.

Conflict of Interest : Nil

Source of Funding : Self

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DOI Numher: 10.5958/0976-5506.2018.01345.1

Activities of Daily Living and Instrumental Activities of Daily Living in Patients with Schizophrenia: A Scoping Review

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ABSTRACT

Introduction: The nature of research, as well as mental illness treatment, has been continuously evolving. Although various studies have focused on Activities of Daily Living (ADL) and Instrumental Activities of Daily Living (IADL) difficulties in schizophrenia, no formal review has been established so far. This scoping review aims to identify existing occupational therapy literature related to ADL and IADL in people with schizophrenia.

Method: Comprehensive search of Web of Sciences, Scopus, PubMed/MEDLINE, CINAHL Plus full-text, ProQuest Health & Medical Complete, PsycINFO databases was carried out for peer-reviewed journal articles related to ADL and IADL among patients with schizophrenia. Data were extracted and analyzed using the descriptive analysis.

Conclusion: This study provided a broad overview of ADLs and IADLs done by patients with schizophrenia. The results of the current review will help identify gaps in the occupational therapy evidence related to practice in mental illnesses, especially in schizophrenia.

Keywords: Occupational therapy, schizophrenia, ADL, IADLs.

INTRODUCTION

Schizophrenia is "a clinical syndrome of variable but profoundly disruptive psychopathology that involves cognition, emotion, perception and other aspects of behavior" [(1)]. Patients with schizophrenia may have symptoms such as such as delusions, hallucinations, disorganized speech, grossly disorganized or catatonic behavior, negative symptoms and social/occupational dysfunction. Diagnostic and Statistical Manual of Mental Disorders, 5th edition (DSM-5) states that at least two or more of such symptoms should be present for a significant portion of time during a one-month period for a diagnosis of schizophrenia.

Occupational/social dysfunction is marked disturbance in one or more areas of functioning such as work, interpersonal relations, or self-care [(2)]. The National Institute of Mental Health (NIMH, 2016), states that the prevalence rates for schizophrenia are approximately 1.1% of the global population over the age of 18.

Schizophrenia affects one's occupations like self-care and social functioning [(3)]. According to the American Occupational Therapy Association (n.d), the focus of occupational therapy is to support and enable each person's "health and participation in life through engagement in occupation." The World Federation of Occupational Therapists (WFOT, 2012) states that occupations involve actions people need, want and are expected to do; they are also activities that people engage in on an everyday basis as individuals, or in groups, to bring about meaning and purpose to life.

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Self-care activities, considered as activities of daily living (ADLs) in occupational therapy, are defined as activities concerned with taking care of one's body [4]."Activities to support daily life within the home and community that often require more complex interactions than those used in ADLs" are defined as instrumental activities of daily living (IADL). ADL include bathing, toileting and toilet hygiene, dressing, swallowing/eating, feeding, functional mobility, personal device care, personal hygiene and grooming, and sexual activity. While IADL includes care of others, care of pets, child rearing, communication management, driving and community mobility, financial management, health management and maintenance, home establishment and management, meal preparation and clean-up, religious and spiritual activities and expression, safety and emergency maintenance and shopping [5]. These activities are "fundamental to living in a social world as they enable basic survival and well-being" [6].

There are different studies associating schizophrenia with a deterioration in ADL or IADL [7, 8]. A study [9] shows that living difficulties are between 2 and 12 times more common for people with schizophrenia than for people with other psychological disorders. One of the essential intervention goals in patients with schizophrenia is independence in ADL [10].

Although there have been developments in biological and psychosocial treatments, many people with schizophrenia are still considered to have problems in performing the roles and occupations for daily life. A study [11] proposed that occupational engagement is often viewed as living life more fully despite mental illness. Therefore research is required to measure this domain for effective interventions in schizophrenia [12]. Through analysis, more effective interventions can be identified which will help improve the quality of care provided to clients [13].

Although various studies considered ADL and IADL difficulties in schizophrenia, there is lack of reviews in this area. With future demands of evidence-based practice, it is essential to review the research in this area. Therefore, in this scoping review, we analyzed research that is more relevant to current clinical settings and issues and compiled the studies focussing on ADL and IADL in people with schizophrenia.

Objective:

This scoping review identified existing occupational therapy literature related to ADLs and IADLs in people with schizophrenia which will further help to identify gaps in effective interventions.

Research Question: What is the available occupational therapy literature focusing on ADL and IADL among people with schizophrenia?

METHOD

This scoping review followed the following methodological framework [14]

Stage 1: Identifying the research questions:

Based on the literature review, research question was derived and the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guideline were used to report the results of the review.

Inclusion criteria

(a) All occupational therapy literature focussing on ADL and IADL in people with schizophrenia from January 2012 to December 2017, available in English was considered for this study.

(b) Articles related to all types of schizophrenia were included.

(c) Only studies those had at least one occupational therapist as the author were considered.

Exclusion criteria:

(a) Articles written by other professional but published in OT journals were excluded.

(b) Studies apart from free full-text online publications were also excluded.

Stage 2: Identifying relevant studies

Two researchers independently conducted a comprehensive and broad search of following electronic databases: Web of Sciences, Scopus, PubMed/ MEDLINE, CINAHL Plus full-text, ProQuest Health & Medical Complete, PsycINFO. Search terms included keywords developed from Medical Subject Headings (MeSH) and 'ADL,' 'BADL,' 'IADL,' 'ADL retraining,' 'Schizophrenia,' 'Occupational Therapy,' using Boolean operators such as AND, OR and NOT. References were

exported and duplicates removed using citation manager software.

Stage 3: Study Selection

Two independent researchers screened the titles, abstracts, and full articles. Potential relevant articles were screened for inclusion and exclusion criteria. Studies meeting the inclusion criteria were included. A third reviewer resolved any disagreement about the eligibility. The team had a regular meeting to assess the progress of scoping review.

Stage 4: Charting the data

Data charting form was developed and used to extract data from included documents. Two researchers independently collected the data and then further compared it. The data retrieved included: author and publication information, study objectives, methods, findings, and conclusion.

Stage 5: Collating, summarising and reporting the results

Data was analyzed and presented using descriptive summary analysis.

RESULTS & DISCUSSION

The online literature search revealed that in the past five years, there is insufficient occupational therapy literature focusing on ADL and IADL among people with schizophrenia. The systematic search of the electronic databases yielded 88 potential articles. Of these, we included only 17 studies in the review. The remaining 71 were excluded as the studies did not meet the selection criteria such as having an occupational therapist as one of the authors. Out of the 17 articles, there were three articles published in 2011, two in 2013, three in 2014, six in 2015, and three in 2016. We did not find any relevant study published in 2012. Table 1 depicts the detailed data extracted from the articles.

In 2011, one systematic review [15] was published that investigated the effectiveness of OT interventions for people with serious mental illness where the results showed the moderate efficacy of ADL and IADL training to improve performance. Two randomized control trials [16, 17] were conducted in 2011 and 2013 that discussed the influence of schizophrenia symptoms and cognitive abilities on IADL functioning and the effects of occupational therapy on patients with schizophrenia respectively. The former claimed that IADL that are required for efficiently surviving in the community are not typically performed in institutional care settings, while the latter concluded that occupational therapy combined with medications enables improvement of patient's functioning.

There were three quasi-experimental studies done in 2011, 2014, and 2016. The first [18] was a comparison between occupational goal interventions to the frontal executive program. The study [19] from 2014 focused on occupational therapy and functional independence in people with schizophrenia, and the study showed improved functional independence measure scores after OT intervention. The study [20] from 2016 discussed individual occupational therapy intervention in comparison to group intervention and yielded results that the addition of individual intervention to group occupational therapy intervention improved cognitive functioning of people with schizophrenia significantly.

Two semi-structured qualitative studies [21, 22] were focused on mental illness and loss of occupation, where the study results explain that patients with mental illness experienced occupational loss. The later study [23] discussed the attitude of patients with schizophrenia towards occupational therapy and life satisfaction, where results yielded that 85% of the study population believed occupational therapy was beneficial.

In 2014, a narrative review [24] was published on the overview on occupations or activity based groups described in occupational therapy, and the literature showed that more evidence was required and that activity-based group interventions provided to young people with mental health difficulties may enhance their health.

Two retrospective studies were done in 2013 and 2015. The study [12] from 2013 explored the relationship between cognition and functional independence, and identified the most challenging areas of performance for people with mental illness. Results showed that 30% of functional dependence was explained by cognitive deficits, and the most challenging areas were medication management, housework, cooking, and money management. The 2015 study [11] evaluated ADL'S with Assessment of Motor & Process Skills (AMPS) in people with schizophrenia, where the results concluded that

AMPS was beneficial, but more useful in conjunction with other functional assessment tools.

Four cross sectional studies [11, 25, 26, 27] were identified from the databases, out of which, three were done in 2015 while one was published in 2016. In 2015, one study [25] explored assessment practices of occupational therapists and came to the conclusion that non standardized interviews and observations were commonly used, and COPM and AMPS were the frequently used standardized assessment tools. The study also found that no assessments were done after the initial period. Another study claimed that occupational engagement promoted empowerment. The third study [26] from 2015 that explored the factors influencing occupational engagement in people with mental illness and concluded that occupational engagement helps live meaningful life despite illness. This was supported by a study [27] in 2016 as it claimed that people with schizophrenia benefitted from doing occupations.

Although data shows that a systematic review has been established; as previously explained in need of this study, no formal review has been published that focuses exclusively on ADL and IADL in people with schizophrenia. Similarly, there has been only one retrospective study that focuses on difficulties in IADLs and ADLs in people with schizophrenia, but there has been no study that explains effective interventions for the same. In this literature review, no defined trends were evident. Granting that there are articles that support occupational therapy interventions' role in the significant improvement of functioning in people with mental illness [12, 18, 20, 27] from the analysis, it is clear that more research is required within this domain.

IMPLICATIONS OF THE STUDY

This scoping review may aid as a guide for available occupational therapy literature in the areas of ADLs, IADLs, and schizophrenia. Moreover, examination of studies involving the services of occupational therapy in mental health practice may serve as an essential reference for occupational therapists and give evidence to practice when discussing the services provided and to other health professionals, lawmakers and insurers, to understand how occupational therapy services help treat clients with mental illness. Additionally, this scoping review may also serve as the groundwork for future studies with regards to ADLs and IADLs in people with schizophrenia.

CONCLUSION

Review of articles revealed that there is a lack of evidence in domains of ADL and IADL intervention for people with schizophrenia, even though occupational therapy has its origins in mental health. More evidence-based studies are required to support OT interventions to help improve the quality of life in people with schizophrenia.

Conflict of Interest: None

Source of Funding: Self

Ethical Clearance: Not required.

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DOI Numher: 10.5958/0976-5506.2018.01346.3

Comparison of Tear Film Characteristics between *Kajal* (Kohl) Users and Non-Users

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ABSTRACT

Aim: To determine the effect of applying *Kajal* (an eye cosmetic) over the eye lids on tear film stability and quantity.

Methods: Non-invasive tear break-up time and Schirmer test were performed on 46 female subjects (23 *Kajal* users and 23 non-*Kajal* users). All measurements were performed in the morning.

Results: Quantity of the tear film was not altered with Kajal use but the stability of tear film was significantly lower in the *Kajal* wearing group ($p<0.001$).

Conclusion: Present study demonstrates that application of *Kajal* as cosmetic over the eye lid margins can reduce the tear film stability.

Keywords: *Kajal, Non-invasive tear break-up time, Schirmer test.*

INTRODUCTION

Application of *Kajal (*Kohl or suruma*)* as an eye cosmetic is a popular practice among women in South Asia, Middle East and Africa. The use of *Kajal* has been reported since antiquity and is worn for a variety of reasons including religious beliefs, tradition, medicinal benefits; but importantly as a cosmetic. *Kajal* may be defined as an eye preparation in ultra-fine form of specially processed "kohl stone" (galena) incorporated with other therapeutically active ingredients from marine, mineral and herbal origin and is applied along the upper and lower eye lid margins.[1,2]

Stable tear film over the cornea is very important to maintain a uniform refracting surface and for comfort in the eye.[3] Usage of eye cosmetics is known to cause disturbances in the stability of tear film and cause dry eye symptoms.[4] Application of *Kajal* over the eye lid margin blocks Meibomian gland orifices and can potentially affect the lipid layer of tear film which in turn may affect the tear film stability.[2] This study was done to determine the effect of applying *Kajal* along the eye lid margins on the tear film quantity and stability.

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SUBJECTS AND METHOD

Forty-six young, healthy female students (23 *Kajal* wearers) with their age ranging from 18-25 yrs were recruited for the study. To determine the sample size, a pilot study was conducted on 10 subjects and based on the observations it was estimated that each group should have a minimum of 21 participants. Subjects having any ocular pathology, eye lid abnormalities, contact lens wear, usage of any type of systemic medications, smokers and those who used computers for more than 6 hrs a day were excluded from the study. All participants signed a written informed consent before they were enrolled. An approval from the institutional review board was obtained prior to the conduct of the study.

Subjects who used *Kajal* for at least 5 days a week on upper and lower eye lid margins and had been applying it 6 months or more were defined as *Kajal* users. Since application of fluorescein to measure break-up time (BUT) was known to alter the interaction between the tear layers; a more clinically reliable option of non-invasive tear break-up time (NIBUT) was chosen to assess the tear stability.[5] NIBUT was performed with a Bausch & Lomb model Keratometer (KMS 6; Appasamy, Chennai, India) which involves observation of a reflected keratometric mire image from the anterior tear surface. At the time of measurement, subjects were instructed to blink completely for 3 times and then asked to refrain blinking. The time (in seconds) between the last blink and a break or discontinuity in the appearance of keratometric mire reflection on the cornea was taken as break-up time.[5] This procedure was repeated thrice and average was taken.

Tear quantity was measured using Schirmer test-II after instilling topical anaesthetic (Proparacaine Hydrochloride 0.5%, Sunways (I) Pvt.Ltd, Mumbai, India) eye drops to avoid reflex tearing. All Schirmer tests were performed using sterile paper strips (BIO SCHIRMER; Biotech Vision Care, Gujrat, India) that were pre-packaged. Subjects were made to sit comfortably on a chair and asked to look left and up. Strips were placed at the lower conjunctival cul-de sac hooked over the lateral 1/3rd of the lower eyelid margin and subjects were asked to keep the eyes closed. Strips were removed after 5 minutes and measured the length of wetting.

Both measurements were done only for right eye at room temperature between 9:00am – 10:0am. NIBUT was performed as the first test and a gap of ten minutes was provided before Schirmer test. Data were analyzed using SPSS v.16. Normality of the data was confirmed using Kolmogorov – Smirnov test and Independent t-test was performed to compare the mean tear film values between the groups. A p value of <0.05 was considered statistically significant.

RESULTS

Mean age of the participants was 19.9±1.8 years (*Kajal* users 19.7±1.9 yrs; non-*Kajal* users 20.0±1.7 yrs). *Kajal* wearers applied that for cosmetic purposes and the mean duration of use was 5.1±1.4 yrs (range 2 yrs to 8 yrs). The results of all tear film measurements are summarized in table – 1.

All the variables shown in the table followed normal distribution (Kolmogorov-Smirnov test p>0.05). Independent sample t-test was performed to find out whether the differences observed in the tear film characteristics between the groups were significant or not. The Schirmer test demonstrated higher values in the Non-*Kajal* wearers; however, the difference was not statistically significant (p=0.984). But, the NIBUT measurements done on Non-*Kajal* users showed a significantly higher value compared to the other group (p<0.0001).

Table-1: Tear film parameters measured in Kajal users and non-kajal users

	Mean	**SD**	**Maximum**	**Minimum**	**Median**
NIBUT – with Kajal (sec)	6.98	1.33	10.60	5.20	6.70
NIBUT – without Kajal (sec)	9.56	1.66	12.80	6.35	9.20
Schirmer Test – with Kajal (mm)	20.44	8.84	35.00	7.00	21.00
Schirmer Test – without Kajal (mm)	20.50	9.08	35.00	9.00	19.00

DISCUSSION

A relatively thinner tear lipid layer secreted by tarsal Meibomian glands spread over the ocular surface by blinking mechanism protects the tear film from evaporation. Disturbances to the tear film lipid layer like thinning and non-uniformity is known to affect tear film stability.[6,7] Use of ocular lubricants, cosmetics and contact lenses are among the factors that are known to decrease the stability of tear film.

Application of eye cosmetics results a continuous presence of its minute particles in the tear film. Goto et al demonstrated that the area on the eyelid where the

cosmetics are applied has an important role in the rate of migration of these particles to the tear film. Cosmetic material applied at the inner eyelash line group showed a higher migration and contamination rate compared to the eyelash line and outer eyelash line group.[8] This contamination in turn causes a faster destruction of lipid layer and reduces the capability of lipid to spread.

The effect of cosmetic use on tear film is also depends upon the nature of its ingredients and the skill and the area where it is applied.[9] Cosmetics applied over the margin of eyelids results a direct obstruction to the Meibomian gland orifices and contaminates its secretion. Moreover, it also leaves significant amount of debris on the superficial lipid layer.

Kajal is usually applied along the lid margins which causes the cosmetic particles to spread over the Meibomian gland openings. In this study, the NIBUT measurements performed on subjects who were applying *Kajal* showed a significantly lesser value compared to the group which was not using the cosmetic. The contamination of tear film and blocking of Meibomian gland openings due to the spread of cosmetic materials over the lid margin would have affected the tear film stability. Previous studies demonstrates that eye makeups are shown to cause dry eye symptoms.[10] Findings of the this study has a clinical importance since majority of contact lens users worldwide are females.[11] Hence it is suggested to consider this while instructing the contact lens users if they are using eye cosmetics and especially if they apply it on eye lids. On the other hand, quantity of tear film measured using Schirmer test – II has not shown any difference between the groups.

However, due to the tendency of high variability of tear film tests, these results should be validated on different set of subjects and settings. The impact of eye lid cosmetics on tear stability can also be confirmed by repeating the same measurements after stopping the cosmetic usage for a while in people who use eye lid cosmetics. A comparison of subjective ocular symptoms between *Kajal* wearing and non-wearing groups would also help us to understand the subjective effect of using eye lid cosmetics.

In this study, we examined the tear film clinical characteristics on two groups of subjects; those who used *Kajal* as an eye cosmetic and those who did not. The results demonstrate that mean non-invasive tear break-up time (NIBUT) among *Kajal* wearers were significantly lower than those who did not apply it.

Source(s) of support/Funding : Nil

Conflicting Interest (If present, give more details): Nil

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DOI Numher: 10.5958/0976-5506.2018.01347.5

Empirical Evidences for Effectiveness of Employee Participation in IT Companies

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ABSTRACT

Employee participation is a special form of delegation in which the subordinates gain greater control, freedom of choice with respect to bridging the communication gap between the management and workers. The purpose of this paper is to empirically explore the evidences of employee participation in IT companies. This paper adopts thequalitative and quantitative methodology. Data were collected from top 5 IT companies and Statistical tools like KMO & Bartlett's test, Chi square test, One way variance and Linear multiple regression analysis were used to analyze the data in systematic order. The findings of this study indicates that there are 5 pre dominant factors namely job involvement, job design, performance appraisal, interpersonal relationship and executive development increases the efficacy of employee participation in IT companies.

Keywords: *Employee participation, IT companies, Employee perceptions, Contributions, Involvement, Productivity.*

EMPLOYEE PARTICIPATION

Participative supervision is a device that is used to stimulate the workforce. When subordinates are concerned in management at all levels it is known as involvement. Contribution is the cerebral and exciting connection of inhabitants in collective situation that encourage them to donate to faction goal and distribute liability for them.

Employee participation is a primary model in the endeavor to recognize and explain both qualitatively and quantitatively the life of the rapport between a business and its employees. An occupied worker is defined as one who is entirely immersed by and passionate about their work and so takes helpful action to further the organization's status and welfare. An engage employee has a positive approach towards the business and its ethics. An organization with elevated employee engagement may therefore be expected to do better than those with low employee engagement.

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EFFECTS OF EMPLOYEE PARTICIPATION

Employee contribution will create effects in employee's job fulfillment, employee efficiency, employee obligation and they all can produce relative benefit for the organization. Growing employee involvement will have an optimistic outcome on employee's job satisfaction, employee assurance and employee efficiency. Naturally rising employee participation is an enduring process, which demands both awareness from executive side and plan from the employee side. The level of employee participation amplifies the organization's intended planning activities.

Employee participation is a unique form of entrustment in which the subordinate achieve greater control, liberty of option with high opinion to bridge the communication break between the administration and employees. The employee contribution in the preparation process leads to prospective improvement, which may facilitate chance and appreciation in the organization. It amplifies employee's self-respect and develops the invention. It grant employees the chance to use their intellectual which will direct them to better decisions for the organization Employee involvement contribute to faith and good judgment of control.

BENEFITS OF EMPLOYEE PARTICIPATION IN ORGANIZATION

The benefits of employee participation are apparent, and well-worth the effort. They include constructing society, better contact, fewer tension, larger yield, and superior product worth. If workers believe that their view is valued it will enhance their excellence of labor atmosphere which lead the company by the expansion of a worker population. Employees will have a concrete possibility for communicating their feelings direct to new inventive ideas. Involvement of employees in all fields in the business, lead with a reduction of pressure, better-off work milieu, emotion respected and dedicated towards the work. If the employee's suggestions are taken into deliberation new workflows will be implementing more rapidly to raise product output.

LITERATURE REVIEW

Gary J. Castrogiovanni, Barry A. Macy, 1990, on his empirical study found that intensified worker participation results in amplified information-processing capacity. The study proved that participation is an expedient strategy for developing the data processing requirement abilities in the level of outcomes of organizational efficacy[10].

Susan Schwochau, John Delaney, Paul Jarley, Jack Fiorito, 1997, through their study, identified that involvement program are certainly connected with the evaluation of employees , earning sharing, plan construction, employee judgment, aptitude, proficiency and acquaintance leads to organizational performance[9].

Gyan-Baffour George, 1999, in an innovative study, found that business has advanced flexible job design than the routine of the employee will also be in higher level. On analysis, it was found that some factor are most important to conquer elevated level of routine they are forecast position, know-how education, impact of equipment, job plan and job conversation[3].

Rhokeun Park, 2007, in an innovative study focused on different styles of employee participation in adoption of different task characteristics of employees. On analysis, it was found that sharing management information with employees leads to organizational commitment, which in turns integrates them to self-directed teams and group incentives[2].

Brent Kramer, 2008, through his study found out that shared capitalism has beneficial effects on all outcomes when combined with high performance work policies such as employee contribution, education and job safety. On analysis it was found that ownership and authority have synergistic effects on yield and promotion[8].

Edwinah Amah and Augustine Ahiauzu 2013, in a co-relational study found that employee participation in certain process such as decision-making, ensuring the achievement of organizational goal, ownership and responsibility, job satisfaction behavior, maintaining culture, increase in profitability, productivity and market share leads to the overall effectiveness of the organization[4].

Steven H.Appelbaum, Damien Louis, Dmitry Makarenko, Jasleena Saluja, Olga Meleshko and Sevag Kulbashian, 2013, through his study identified that practicing process of decision-making utilizing staff in certified practice increases staff enthusiasm to take part in decision-making process. On study, it was found that involvement of staff in decision-making process increase the stage of job fulfillment and dedication of the staff towards the institute[5].

B.Swathi, D.Raghunadha Reddy, V.Venkat Reddy, April 2014, through their study investigated the effects of employee contribution and employee development in public and private sector organizations. On analysis, it was found that understanding employees in suggestion, ideas, recommendations, acknowledgement and responding to matters, make them feel that they are recognized by the organization, which leads to employee involvement and employee culture[6].

Eva Kyndt, Patrick Onghena, Kelly smet, Filip Dochy, 2014, through their investigated the acquiescence of employees in employment linked learning. It was found that some affirmative factor drive them towards development intention such as self-motivated in profession processes, time supervision, employability, organizational hold, development possibilities, former participation and preliminary level of edification[7].

Marie-France Waxin et al, 2018 , It was found that there are six predominant factors more suitable for recruitment and selection of employees in any organizations namely lack of relevant education, skills and experience, expectation of high compensation, lack of career awareness, heavy competition in the industry, assigning job suitability and resistant from expatriates[1].

GAPS IN THE LITERATURE

After reviewing the above mentioned international reviews pertaining to employee participation the researcher identified to pre dominant gaps that still remains unanswered.

What are the factors that can ascertain the real participation of employees?

Is there any relationship between employee participation and benefits to the organization?

In order to ascertain these research gaps the researcher attempts in this direction to find the solution to the above mentioned research question.

OBJECTIVES OF THE STUDY

To determine the factors of employee participation.

To find the nature of relationship between employee participation and organizational benefits.

HYPOTHESIS

There is no relationship between employee participation and benefits to the organization.

METHODOLOGY

This research is completely based on the responses given by the IT company employees to a well structured questionnaire. It consists of three parts namely

1. Personal and organizational details of the employees.
2. Employees' perceptions towards their participation in organizational activities.
3. Employee perception on organizational benefits.

The first part completely consists of optional type questions and the

Second and third are based on Likert's five point scale which ranges from strongly agree to strongly disagree.

DATA COLLECTION

The researcher used convenience sampling method to collect the responses from top 517 companies. The researcher circulated 50 questionnaire each in these 5 companies and able to get 234 valid responses. Hence the sample size of research is 234.

DATA ANALYSIS

After obtaining the 234 responses they are systematically coded and numerically converted in the SPSS version 20 package. The following statistical tools are used to analyze the data.

1. KMO and Partlett's test.
2. Chi square test
3. One way analysis of variance
4. Linear Multiple regression analysis.

ANALYSIS AND DISCUSSION

In this section the researcher intended to identify the factors of employee participation in IT companies. The researcher considered all the 20 variables of employee participation and applied exploratory factor analysis and obtained the following results.

TABLE: 1

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.328
Bartlett's Test of Sphericity	Approx. Chi-Square	3467.081
	Df	190
	Sig.	.000

From the above table it is found that the KMO value for sampling adequacy is 0.328 and Bartlett's test of sphericity is with appropriate Chi Square value is 3467.081, P=0.000 are statistically significant at 5% level . This shows that all the 20 variables of employee participation are reduced into 9 predominant factors with cumulative variance of 78.356% that is clearly expressed in the table below.

TABLE: 2: Cumulative variance analysis

Component	Initial Eigenvalues			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.922	14.610	14.610	2.421	12.107	12.107
2	2.447	12.233	26.843	2.036	10.181	22.287
3	2.014	10.068	36.910	2.007	10.036	32.323
4	1.901	9.503	46.413	1.928	9.638	41.961
5	1.636	8.181	54.594	1.583	7.913	49.874
6	1.407	7.034	61.628	1.561	7.807	57.681
7	1.246	6.231	67.859	1.495	7.477	65.158
8	1.087	5.437	73.295	1.437	7.186	72.343
9	1.012	5.060	78.356	1.202	6.012	78.356
10	.952	4.759	83.114			
11	.679	3.395	86.509			
12	.593	2.963	89.472			
13	.515	2.576	92.048			
14	.419	2.095	94.143			
15	.358	1.791	95.935			
16	.274	1.370	97.305			
17	.246	1.230	98.535			
18	.149	.747	99.283			
19	.082	.409	99.692			
20	.062	.308	100.000			

From the above table it is evident that the total cumulative variance is 78.356% and individual variances for the 9 factors range from 6.012% to 12.107%. This implies the 9 factors are job design, job assignment, job involvement, job satisfaction, job description, transparency, trust and openness, performance appraisal system and interpersonal relationship.

This is further validated by applying confirmatory factor analysis. In this analysis the underlined variables of each factor is validated with high variable loadings. In this analysis the researcher verifies the validity through the following fit indices as shown in the table below.

TABLE: 3: Confirmatory factor analysis

Serial no	Fit indices	Values	Bench mark
1	Chi square	2.107	-
2	P value	0.341	> 0.05
3	Goodness of fit index	0.959	> 0.9
4	Comparative fit index	0.962	> 0.9
5	Nor med fit index	0.955	> 0.9
6	Root mean square error of approximation	0.07	< = 0.08

From the above table found that all the fit indices are satisfying the benchmark values. It shows that all the 9 factors job design, job assignment, job involvement, job satisfaction, job description, transparency, trust and openness, performance appraisal system and inter personal derived by the researcher is validated with high reliability.

FINDINGS AND CONCLUSIONS

It is concluded from the research that in the IT companies employee participation depends upon the 5 pre dominant factors namely

1. Job involvement
2. Job design
3. Performance appraisal
4. Inter personal relationship
5. Executive development

It is also further ascertained that the job involvement of employees increase the organizational productivity. Job design which is assigned to the employees is very important to verify their full participation to obtain the organizational benefits. A rationalized performance appraisal system motivates the employees to show their full participation for the organizational benefits. Smooth inter personal relationship positively motivate the employees to dedicate their work to the development of the organization. Executive development programs in the IT companies directly help the organization to increase the productivity, individual efficiency and total change in the organization.

Conflict of Interest – Nil

Ethical Clearance – Taken from UGC Committee

Source of Funding- Self

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DOI Numher: 10.5958/0976-5506.2018.01348.7

Biosignal Processing Approaches for Detecting Mental Fatigue

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ABSTRACT

Mental fatigue is a typical phenomenon in our everyday life, and is characterized as a condition of cortical deactivation. Mental deactivation produces performance degradation such as human failures, errors and health problems, thereby detaining the quality of life. Various physiological parameters obtained from biosignals have been identified as an indicator of fatigue. The main biosignals that help to detect the mental performance are Electrocardiogram (ECG), Electroencephalogram (EEG) and Electrooculogram (EOG). After acquiring these signals, they undergo various stages of processing which includes signal de-noising, feature extraction and classification for the efficient analysis of mental performance. The paper provides comprehensive review of various approaches involved in processing of biosignals to detect mental fatigue.

Keywords – *Mental Fatigue, Signal Processing, Electrocardiogram (ECG), Electroencephalogram (EEG), Electrooculogram (EOG).*

INTRODUCTION

Across the world, 10% of the total population at any one time experiences the ill effects of steady tiredness or fatigue[1]. Fatigue is a kind of stress that prolongs over a period of time. Particularly, mental fatigue is a temporary inability to maintain optimal cognitive performance[2]. This fatigue is life undermining, particularly when the sufferer need to play out a few assignments, for example, driving a vehicle, working substantial hardware or playing out any cautiousness undertaking. The effects of mental fatigue are decreased alertness level, loss of finer motor control and reduction in efficiency to perform any task[1]. Therefore it is necessary to analyze the cognitive state of the person in advance so that immediate treatment can be provided to avoid catastrophic effects.

Basically there are two broad ways of detecting human fatigue: Vision based and Signal based. Visual practices that ordinarily mirror a person's level of fatigue incorporate eyelid development, head development, look and facial appearance. Percentage of eyelid closure (PERCLOS)[3] has been observed to be the most robust and substantial measure of an individual's awareness level. Though vision based method is non-intrusive, it is not all that precise, extremely influenced by environmental backgrounds[4]. In signal based method, biosignals are acquired from individual using sensors, processed for removing the noise and then relevant features are extracted. This method is accurate but mostly intrusive.

In this paper, signal based method is applied for detecting mental fatigue and a comprehensive survey of various signal processing approaches adopted with biosignals like Electrocardiogram (ECG), Electroencephalogram (EEG) and Electrooculogram (EOG).

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MATERIALS AND METHODS

Biosignal Processing Approaches

Often the goal of signal processing is to identify the presence of signal buried in noise, to separate out signal from noises and to detect the features of signal present in noise. ECG, EEG and EOG are the biosignals taken for analysis of mental performance level, as the researchers have found that the parameters of these signals show changes when there is a gradual decrease in cognitive task. Figure 1 shows the fundamental processes involved in signal processing approaches. In this paper, we wish to list down the major de-noising and feature extraction techniques applied for the efficient analysis of mental fatigue.

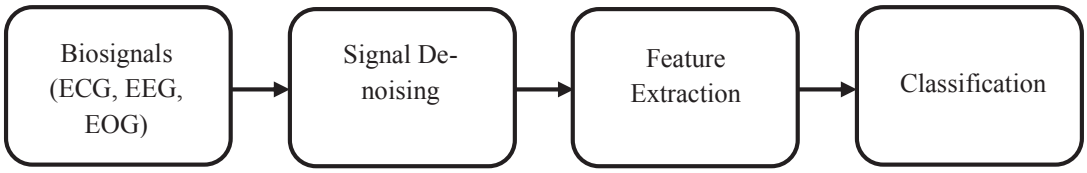

Figure 1. Block diagram of signal processing approach for detecting mental fatigue.

Denoising Techniques

The process of eliminating noise from a signal is referred as signal de-noising. Intuitive quality, compression, efficacy, accuracy of the signal and bandwidth reduction can be improved through de-noising[5]. It is also very difficult to remove the noises using simple filtering operations which cannot remove noises completely as they may cause elimination of frequencies contributing to ECG features which causes distortion of signal[6].

Wavelet De-noising

The most widely used Wavelet Transform has the property of multi-resolution in a specific manner with variable window size. The de-noising methods based on Wavelet Transform provide quality and flexibility for the noise elimination from signals and image. Adaptive filter based on Wavelet Transform is the recommended approach for baseline wander reduction in ECG signal[7].

The determination of proper mother Wavelet functions, selecting the Wavelet decomposition levels and determination of thresholds at each sub-band are some stand still problems to remove different noises from the signal. Other limitations of Wavelet transforms are: (i) the sharp threshold value may leads to Gibb's phenomenon on reconstructed ECG signal (ii) Soft threshold value may decrease the voltage level of the ECG waveforms and more over lessen the amplitudes of the R waves. Also if the signal and noise are of same amplitude or frequency, then it is difficult for distinguishing them by Wavelet de-noising. Therefore, Empirical Mode Decomposition (EMD) is used to overcome all these drawbacks.

Empirical Mode Decomposition

Huang et al.[8] introduced Empirical Mode Decomposition (EMD), an adaptive data analysis method. In this method, the given signal is decomposed into a finite number of sub components which are called as Intrinsic Mode Functions (IMFs). The IMFs are obtained by a standard process called shifting and represents a signal in the oscillatory mode. EMD is special regarding its properties such as time localization, fully data-driven, not require prior knowledge on the originality of signal and information on IMF components in the data. It is efficient in removing baseline wandering and muscle noise without distortion to the ECG signal[9]. However, EMD experiences some problems, like presence of oscillations with similarity in various modes or existence of oscillations of different amplitudes in a mode named as "mode mixing". To mitigate these drawbacks, the Ensemble Empirical Mode Decomposition method is used.

Ensemble Empirical Mode Decomposition (EEMD)

Ensemble Empirical Mode Decomposition performs the Empirical Mode Decomposition over an ensemble of the signal with Gaussian white noise. The mode mixing problem can be avoid by adding white Gaussian noise incorporating the time-frequency range for gaining benefit of dyadic filter bank character of the EMD[10]. The reconstructed signal with residual noise and various realizations of signal can produce wide variety of modes.

Principal Component Analysis (PCA) based De-noising

A mathematical procedure that transforms possibly correlated variables into smaller uncorrelated variables is called principal components. If the data set is normally distributed, then these components are independent only. Eigen analysis is the mathematical technique used in Principal Component Analysis (PCA)[11]. When eye artifacts and brain signals have comparable amplitudes, PCA cannot completely separate these two. Researchers have found that PCA based adaptive threshold method provides better Peak SNR compared to the Wavelet threshold method and small elapsed time so that the ocular artifacts in EEG signal can be removed effectively.

Independent Component Analysis (ICA)

ICA is an often preferable method applied to multichannel EEG recordings which remove several noises and artifacts from EEG signal by changing the contributions of noisy sources onto the scalp sensors. ICA separates time domain data into statistically Independent Component (IC) waveforms[12]. ICA outputs two matrices: one that transforms EEG to IC data, and its inverse matrix that transforms IC back to EEG data. One of the advantages of ICA is that it is flexible in orthogonality and considers components as independent rather than uncorrelated. However, the variance maximization property is leaning by ICA components compared to PCA components.

Feature Extraction

After de-noising of the signals, physiological parameters which show variation to mental fatigue are considered to be features that need to be extracted for analysis of mental performance state. Feature extraction is a method usually used to extract the resources required to describe a large set of data properly[13]. Both online and offline manners are available for feature extraction. Most of the researchers have done analysis on biosignals using FFT, DWT and Wavelet Packets (WP). WP can obtain all frequency bands with equal resolution with less computational complexity and faster performance than original FFT. Thus, WP analysis can provide more subtle information on approximation as well as detail space efficiently. Table 1 lists the most widely accepted feature extraction methods.

Table 1. Feature extraction methods for fatigue detection.

Reference No.	Signals	Feature Extraction Methods
14	ECG	Fast Fourier Transform (FFT)
15	ECG, EOG	Discrete Wavelet Transform (DWT)
16	EEG	Wavelet Packet Analysis
17,18	EEG	Fast Fourier Transform with Hann Window
19	ECG	Wavelet Packet Decomposition
20	EEG	Discrete Wavelet Packet Transform (DWPT)
21	EEG	Fuzzy Logic
22	EOG	Power Spectral Density by Welch's Algorithm

Classification Techniques

There are three broad categories of classification approaches and they are Unsupervised, Supervised and Reinforcement. The similarity in modeling and supervising dynamic systems are the two main advantages of supervised learning technique. It is of two types: linear and nonlinear. The best classifier is chosen based on the mean classification rate with high value. Commonly used classifiers for detecting mental fatigue are K Nearest Neighbor (KNN), Support Vector Machine (SVM), Artificial Neural Networks (ANN), Linear Discriminant Analysis (LDA), Random Forest, etc. Biosignals and the corresponding classifiers used for the classification of mental fatigue state are listed in Table 2.

Table 2. Feature classification methods for fatigue detection.

Reference No.	Signal Modality	Feature Classification Methods
16,18	EEG	Support Vector Machine (SVM)
23,17	EEG	Random Forest (RF)
24	ECG	Quadric Discriminant Analysis, K Nearest Neighbor (KNN)
19	EEG	Kernel Principle Component Analysis (KPCA), SVM
22	EOG	SVM
25	EEG, ECG, EOG	KNN, SVM, Linear Discriminant Analysis (LDA)

FINDINGS

Fatigue is a state of diminished mental and physical efficiency. Due to mental fatigue, brain cells become totally exhausted which may results in serious effects if it is left unnoticed or untreated. So it is necessary to detect the onset of mental fatigue well before for overcoming the problems of mental inattention. Though fatigue detection using biosignals is intrusive, it gives accurate and reliable information. After the acquisition of signals, they undergo various stages of processing to provide significant information for the analysis. This paper ultimately focuses on highlighting the approaches applied in various stages of processing with all its pros and cons. Therefore, from the literature survey, we would like to infer few points that need to be kept in mind before developing hybrid signal processing method that helps in efficient analysis of mental performance:

In case of ECG signal, Wavelet Transform exhibits an excellent performance on de-noising less noisy ECG signal. But recently Ensemble Empirical Mode Decomposition is found to be a promising approach for removal of baseline variations, power line interference and muscle artifacts from the ECG signal with minimum signal distortion in single step. This method is fully data driven, does not need any priori defined basis system as in Wavelet de-noising and thus making EEMD suitable for the analysis of non-stationary and non-linear signals.

When EEG signal is considered, the most significant noises that interrupt the EEG data are ocular and muscle activity. From the literature we found that EEMD-ICA method is efficient in removing ocular artifacts and EEMD-CCA is suitable for removing muscle activity. EEMD is noise assisted time-space analysis method, in which averaging process is carried out on the added white noise on random number of iterations and the component of the signal is generated by the averaging process. Thereby this kind of de-noising produces most reliable result for highly noisy data.

Among the most commonly used feature extraction techniques, FFT has less computation time for determining DFT but restricted to give only frequency information about the signal and it removes unwanted noise prevalent throughout the entire signal. But discrete Wavelet transform allows removing noise at specific times in the data by providing multi resolution analysis. Compared to discrete Wavelet Transform, Wavelet Packet Analysis shows better performance, requires less computation and decomposition is performed both to detail and approximation coefficients.

The data in input sample mapped to a high-dimensional feature region which is termed as Kernel mapping which creates linearly separable problem by maximizing margin of separation. RF composed of arbitrary number of simple trees that determine the final result. Using tree ensembles significant improvement in prediction accuracy can be achieved. This provides good ability to pre-predict new data case. As the mean classification rate of RF and SVM are equally good compared with other classifiers for classifying mental fatigue state, any one among the two can be used for classification of mental performance state.

CONCLUSION

In this paper we have provided the comprehensive review on the different signal processing approaches that has been adopted so far to detect mental fatigue state from the signals like ECG, EEG and EOG. We have tried to provide the tabulated form of various preprocessing, feature extraction and feature classification methods that has been followed for estimating the fatigue state.

From our above discussion it is clear that the Ensemble Empirical Mode based denoising method with Wavelet packet decomposition based feature extraction technique is highly reliable and better method for processing biosignals. Support Vector Machine and Random Forest classifiers are suitable techniques which provides high classification rate to distinguish whether the person is mentally fatigue or alert.

Conflict-of-Interest: There is no conflict of interest.

Source of Funding: Self

Ethical Clearance: This is not applicable for this study.

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DOI Numher: 10.5958/0976-5506.2018.01349.9

Team Based Learning an Active Teaching and learning Pedagogy: A Narrative Literature Review

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ABSTRACT

Active learning is essential for adult learning and numerous active learning pedagogies have been tested for their effectiveness. One of these pedagogies is Team-Based Learning (TBL). In team-based learning, students are encouraged to participate in individual and group learning activities. The role of the instructor or teacher is to act as a facilitator or guide, instead of the "sage on the stage". Therefore, the **objective** of this paper is to evaluate the evidence of the effectiveness of team-based learning among various professionals. **Method**: The literature search was done using electronic databases to search for primary research studies on the overall effectiveness of team-based learning. The databases of PubMed, CINHAL, and ProQuest were searched for applicable research studies. **Results:** There were 153 articles found on this topic. After reviewing the title and abstract, nine articles were reviewed which are full text, peer-reviewed and available free online. All of these studies reported that students were involved in both individual and group learning. Common tools used were individual readiness assessment tools, group readiness assessment, team-based learning (TBL) sessions by the faculty and student's feedback. All of these nine articles reported that TBL is one of the best methods of teaching for both small and large groups.

Key terms: *Team-based learning, active learning, effectiveness, narrative literature, literature review.*

INTRODUCTION

The present generation of students expect more active learning and look forward to such opportunities in the educational system.(1) However, it is always challenging for the instructor to adopt which type of pedagogy should be adopted which will maximize student learning. In the present day, an adult student at a higher level will have all the opportunity to get the resource materials based on the interest. If a student learns in the group, there is a great opportunity to interact with each other, discuss, and can clarify with each other's perspectives. There are a different method of flipped classroom teaching methods are adapted at a higher level of education. Team-based learning is one of the flipped class/ active teaching methodologies which is used for both undergraduate and postgraduate teaching.

Team-based learning is considered as flipped classroom teaching method for small-group learning which can be used effectively in both small or large classes. (2)

The method of executing TBL is students are divided into teams which should have 5-7 students in each team who need to be together throughout their class. Before starting the unit or module of the curriculum, students are asked to read some of the content related to the subject.

In the initial phase of the TBL, students are asked to appear "Readiness Assurance Process," or RAP. Explicitly, students have to complete a test individually, which is assessed by the "Individual Readiness Assurance Test and then the same test to be completed group when they come for the cla**ss** which is group

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Readiness Assurance Test," or GRAT. The students can be graded based on both the individual marks and the group marks. After the students completing the group readiness assessment, the teacher encourages groups to appeal questions or teacher clarifies students' questions which they have got an incorrect response. This process inspires students to review the material which they have received, evaluate their understanding and can defend the choice of answer. [3]

Objective: The objectives of this review is to identify the studies that have been conducted on team-based learning as a method of teaching and to assess the perception of students and the effectiveness of team-based learning from the available reviews.

Methods: The review was done using electronic databases to search for primary studies which are used team-based learning as a teaching pedagogy. The database like PubMed, CINHAL, and ProQuest was searched for potential research studies on TBL. Articles were limited to the English Language from 2008 to 2017. Both descriptive and evaluative studies were included to achieve the objective of this review. The studies on perception and experience of students on TBL and effectiveness of team-based learning were included.

Results: Figure 1 describes process of the data collection. The initial search resulted in 1409 hits. An additional search was done for the most relevant studies, written in English and restricted to open access and full-text articles. This search yielded 153 articles. The title and abstracts were reviewed and we found nine articles which more clearly reflected the objective of this review.

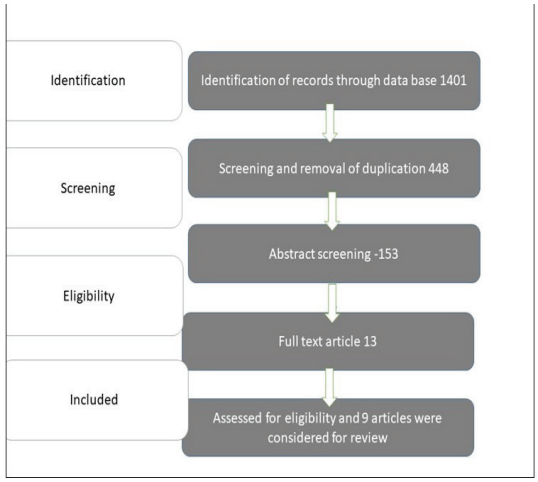

Figure 1 Identification of studies on TBL

Figure 1: Identification of studies on TBL

Table 1: Study characteristics: effectiveness of Team-based learning

Author and year	Type of study	Sample	Sample size	Outcome Knowledge on	Tools used	Findings
Nancy A. Letassy, et al., [4]	Evaluative study	First-year MBBS	140 students	Endocrine module	*I*ndividual readiness assurance test IRAT, TRAT Written team response, Team contribution scores.	The course evaluations compared to traditional teaching method of lecture in 2003, TBL sessions over of course evaluation was found to be positive in the year 2006
McMullen, Cartledge, Levine, Iversen [5]	Evaluative and mixed method	Psychiatry residents	40	Addictions Psychiatry	Classroom Engagement Survey CES, and Value of Teams Scale TBL	There was a significant difference in the mean scores of the lecture method and TBL sessions ($p < 0.001$)
Haj-Ali, Al Quran, 2013[6]	Comparative study	III year BDS students	98	Removable denture prosthesis (RDP) module	IRAT, GRAT, and group assignment projects	Students' mean performance (86.50 %±7.53) on the TBL sessions was significantly higher ($p<0.0001$) than their mean performance on (78.71%±11.61) conventional exams

Cont... **Table 1: Study characteristics: effectiveness of Team-based learning**

Yeshwanth. Rao and Ganes. Shenoy, [7]	Evaluative study	6th semester batch of MBBS students	36	Pharmacology of	Individual Readiness Assurance Test (iRAT): Team Readiness Assurance Test, Immediate Feedback-Assessment Technique	There was an enhancement of knowledge from 3.667 ± 0.82 in pre-test to post-test 4.24 ± 0.66 scores and which was found to be significant (p = 0.0052).
Punja, Kalludi Pai, Rao, Dhar, [8]	Evaluative	first year MBBS students	241 TBL 128 Non-TBL 113	Anatomy topics	Sessional examination MCQs	The was a significant difference in sessional marks of students' those who have gone through TBL sessions compared to Non-TBL sessions.
Noor Akmal Shareela Ismail,[9]	Evaluative	First-year medical students	194	Mutation and Mutation Analysis	Quiz, IRA, GRAT	Teaching medical genetics for MBBS students with TBL was very much accepted by the students. this was also evident in their examination marks.
Hamid Reza Koohestani and Nayereh Baghcheghi[10]	Evaluative	Nursing students of the second year	38	Psycho-socio climate of the classroom	Modified college and university classroom environment inventory (CUCEI) was used to measure the perception of the classroom environment	The mean score 154.2 (SD 13.44) for the lecture method was lower than TBL method of teaching (Mean 179.8 SD,8.27), Which was found to be significant.
Chaya Gopalan & Megan. Klann, [11]	Comparative study	First-year Pharmacy students	187	Physiology	Knowledge questionnaire	The author reported that the flipped method of teaching enhances students' performance by up to 17.5% compared to unclipped lecture method.
Neena Piyush Doshi, [12]	Comparative study	first professional	126 students of second-year MBBS	"Hemodynamic disorders	Individual readiness assessment Group readiness assessment and Student satisfaction score	The multiple comparisons test and summary showed that there was a significant mean difference between the didactic method, IRAT and overall scores. and it was concluded as TBL was effective.

As per the reviews noted in Table 1, five papers, one from medicine, two from the pharmacy, one from nursing, and one from dentistry reported the implementation of team-based learning as a teaching method that was integrated into their curriculum. The team-based learning process in all of the studies included: 1) prior review of the assigned content, 2) individual learning assessment, 3) group readiness assessment and 4) discussion by the faculty and feedback. The authors selected the topic as per their curriculum to test the effectiveness of team-based learning. In these studies, effectiveness was assessed in relation to Individual readiness, group readiness, response to examination post implementation of team based learning. Some of the studies also collected the feedback on team-based learning particularly students' involvement, classroom environment, learning and on the faculty.

Letassy, Fugate, Medina, Stroup, and Britton [4] assessed the effectiveness of TBL at two campus institutions. They conducted 13 TBL sessions which included an initial assignment which was considered to be self-directed learning. Both individual and team readiness assurance tests were conducted. These

measure the accountability for learning and encourage a team problem-solving approach. These were followed by a discussion that was guided by the instructor. Over the course of the semester, students were assessed through a variety of modalities; individual and team readiness assurance tests, peer evaluations, and unit examinations. The overall course grades among students who participated in TBL, in comparison to controls, were higher. The results were improved in terms of the overall grade by 23% in 2006 compared to 9.5% for 2003 results and no students with failing grades in the course after transitioning to the TBL format.

Another study McMullen, Cartledge, Levine, and Iversen [5] included 44 psychiatry residents in Addictions Psychiatry who participated in a TBL module. The common tools used were the Individual Readiness Assurance Test (IRAT) and the Group Readiness Assurance Test (GRAT), both of which include 8–10 multiple choice questions. Initially, students participated in IRAT, followed by teams who were asked to complete the same questions together as a group, followed by a faculty-guided session. Immediate feedback from the participants was collected. The findings demonstrated that TBL sessions could improve classroom engagement compared to conventional lectures. However, subjects did not show any change in their attitudes regarding the value of teams.

Another study on TBL Haj-Ali and Al Quran [6] was conducted at a United Arab Emirates Dental School on the effect of a TBL module on knowledge of preclinical removable denture prosthesis. Ninety-eight students participated as teams. The effect of TBL was assessed with scores from session activities, which includes IRAT, GRAT, scores, written final exam and an OSCE. The results revealed that the students' mean score on performance on the TBL sessions was significantly higher than their mean performance on conventional exams. Also, groups performed better on the Group readiness assessment test than the individual readiness assessment test.

Another group Yeshwanth Rao and Ganesh Shenoy [7] conducted a study on 6th-semester students of pharmacy ($n = 36$)[6]. The pharmacology of fluoroquinolones was the topic being addressed in the session. It was used to test the effectiveness of the TBL pedagogy. After the pre-test followed by the presentation of the cases by the groups, the groups discussed the cases among themselves and with other groups. All the main concepts relevant to the topic were discussed in an interactive manner. Following the case discussion, students completed individual post-tests. A significant difference between the pre-test (3.667 ± 0.82) and the post-test (4.24 ± 0.66) scores was observed ($p = 0.0052$).

Punja D et al., [8] conducted a study to assess the impact of TBL on student performance was conducted in 2014. The study included a TBL group consisting of 128 students and a non TBL group consisting of 113 students. The educational tools that were used were the IRAT, GRAT, and sessional examination. The median sessional MCQ scores of the students who had TBL sessions performed significantly higher than the other students in the non-TBL group ($p<0.001$).

An additional study was conducted at the University of Kebangsaan, Malaysia among 194 first-year medical students on the effectiveness of TBL.[9] The study utilized a module on mutation and mutation analysis. The author reported that using TBL to teach medical genetics was favorably received by the students. Students were active in their classes, and this was noticed in their final marks. This suggests that the TBL strategy can foster quality in teaching achieve learning outcomes and improvement in final grades.

Koohestani and Baghcheghi [10] conducted a study on the effects of team-based learning techniques on 38 second-year nursing students, focusing specifically on the psycho-social climate of the classroom. The first half of the 16 sessions of a cardiovascular disease nursing course sessions were taught by lectures and the second half using the team-based learning method. The modified college and university classroom environment inventory (CUCEI) was used to measure the perception of the classroom environment. Results of the study revealed that there was a significant difference in the mean scores of the psycho-social climate in the classroom when the TBL method was employed (179.8[SD 8.27]) versus the lecture method (154.2 [SD 13.44]). Also, the results showed significant differences between the two groups in sub-square scores of innovation ($p<0.001$), student cohesiveness ($p=0.01$), cooperation ($p<0.001$) and equity ($p= 0.03$).

A recent study by Chaya Gopalan and Megan C. Klann (2017) [11] was conducted at St. Louis College of Pharmacy among 187 students of first pharmacy students. This study addressed the effectiveness of TBL versus

conventional teaching[11]. The TBL group consisted of four to five students in a team and remained as a group for the entire semester. Their TBL activity includes application/analysis/interpretation questions. The author reported that the flipped method of teaching enhanced the students' performance up in terms of overall grade to 17.5% compared to the unclipped lecture method.

Finally, Doshi (2017) [12] conducted a study at Gujarat among 126 undergraduate students of second-year MBBS students. They were taught on Hemodynamic disorders by both TBL and the conventional method. All phases of TBL were included such as pre-class preparation: the individual readiness assurance test (IRAT), the team readiness assurance test (TRAT), the immediate feedback-assessment technique, written appeals, and instructor feedback. The marks scored in the 25 MCQ test on "hemodynamic disorders" was converted into a percentage. The mean student scores by didactic, IRAT and overall was 49.8% (SD-14.8), 65.6% (SD-10.9) and 65.6% (SD-13.8), respectively was significant (P< 0.001) in comparison of didactic versus iRAT and didactic versus overall score. Which is evident that students of the TBL group did well in MCQs test comparison with students who had conventional teaching method.

DISCUSSION

The following areas were identified as prominent themes in the studies discussed above:

Reading before the actual class: In all the studies which are listed above, students were aware of the subject and attempted to review material before coming to the class. [4, 5, 6, 7, 8, 9, 10, 11, 12] This encourages the student to be more engaged in the subject matter so that they can absorb the material in an expedited fashion. The readiness before the class gives some insight to the subject which connects the students with both the teacher and subject. The teacher, however, needs to provide suitable and appropriate resource material, which facilitates assimilation and readiness for the individual assessment.

Group interaction, cooperation and learning by sharing: Students participating in group interactions learn from their own peer group members, which facilitates the broader educational experience. [4, 5, 6, 7, 8, 9, 10, 11, 12]. The group interaction encourages the learner to communicate and understand the perspectives of the other. For examples, during group application sessions, the teacher can facilitate group learning by providing a case study that requires critical thinking and problem solving. This promotes a sharing of ideas with critical analysis.

Interactive and favorable classroom environment: Learning was further promoted in studies where the students were given an opportunity to appeal and to clarify their doubts when posed with common problems. The students were asked to discuss the problem and to find the answer. [5, 9, 10]. The appeals process encourages the student to take ownership of the material and their own learning.

Enhanced students' performance and improvement in grades: Overall grades were improved in all these studies compared with other traditions of teaching. [4, 5, 6, 7, 8, 9, 10, 11, 12]. For any teaching methodology, the ultimate aim is to improve the students' performance. In TBL, student motivation for self-directed learning is enhanced through active engagement in the material, which may have the ultimate effect of improving grades.

Improved Instruction: Some studies in this review described instructors involved in team based learning to be adept at encouraging active learning. [3, 4, 5]. This serves to improve the quality of instruction and thereby enhance the performance of the student.

The themes above exemplify an innovative pedagogical approach that is becoming more mainstream in higher education in the West. These interactive approaches facilitate knowledge application and student accountability which in turn bolsters student performance.

The significant aspect of TBL is to enrich the self-learning and motivate the responsibility of the students. During the process of self-learning students will learn to plan, look for additional information on the interesting subjects and feel the experience of the outcome of self-directed learning.

As the present generation is expecting for innovative teaching methodology, they would appreciate the immediate outcome of what they have studied. The TBL has both the Individual readiness assessment and group readiness assessment which will provide the immediate feedback for the students, which helps the students to understand better if they have difficulty in individual readiness assessment. The adult learning required to

be cooperative learning as students should develop the ability to interact with the peer group members, understand others perspectives and learning to respect each other**.** This is also supported by the Knowles's theory (1984) of adult education. [13]

The teacher has a great responsibility in constructing the learning materials for the students, related to objectives to be learned by self, in the group and facilitated by the teacher. The faculty must create an environment which can create a positive environment for learning in a group.

In every profession, the faculty will try their own method of teaching and learning activities. As per the reviews, TBL is becoming a common method of teaching at international institutions. In India, some professions have started using TBL but overall implementation is not currently prevalent. This may be due to the learning styles and teaching methods expected by educational councils, universities, or institutions. As students, it is very common to expect everything to be taught by the teachers in certain professions. As faculty, it is necessary to create the habit of self-learning. As per the reviews, TBL can be considered to be an opportunity for innovative teachers to implement their course of instruction and encourage adult learning. It is said that "one key doesn't fit for all locks", hence the teacher is required to implement a variety of teaching methods in order to achieve expected outcomes.

CONCLUSION

Team-based learning is an active learning pedagogical method which can be used in institutions of education at all levels. Enhanced learning outcomes can be achieved through pre-class preparation, readiness assessment, in-class application, a favourable classroom environment and improved instruction. The qualities of this type of learning may ultimately improve overall student performance. Additional research is needed to assess long term effectiveness.

Limitation: The review findings are limited to the above studies which were full-text articles from open access online sources only. We did not address in detail the student's perception of team-based learning. As these studies were from a variety of professions, the subject of instruction was not considered.

Conflict of Interest: None was reported

Funding: No funds were received for this project.

Ethical Permission: This article has been reviewed by the Institutional Research Committee.

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DOI Numher: 10.5958/0976-5506.2018.01350.5

A Structured Exercise Training Protocol after Renal Transplantation in Indian Population

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ABSTRACT

Renal transplantation has become successful, established definitive management for irreversible kidney failure. Exercise training after Renal Transplantation is recommended by many previous studies. The residual and emerging issues of physical limitations, cardiovascular risks, osteoporosis, obesity, diabetes and Quality of Life, all demands a custom made exercise training program. As exercise based renal rehabilitation is yet to gain solid roots which not on par with medical and surgical care, a structured exercise training protocol is much needed. Hence this structured, systematic and stepwise exercise training protocol that was tested for its validity and safety to renal transplantation recipients. The protocol structuring involved extensive published literature analysis, scrutiny/ approval of experts and tested for safety with the patient application. The training components, intensity, duration, frequency and precautions needed were keys aspects considered the protocol development, based on prevailing guidelines. The expert's agreement for training protocol contents was analyzed with 5 points Likert rating and their feedback was used to refine contents. Safety of the protocol was established by its clinical application observing for any adverse response and patient feedback for ease of performance. Most of the component of training in all phases exhibited excellent agreement among the subject experts. There was no remarkable adverse response throughout the protocol on its clinical application. The bronchial hygiene therapy, mobility training, graded ambulation and strengthening exercise found 100% acceptance. The heart rate, Blood pressure, oxygen saturation and fatigability were showing a safe zone of training. The structured renal transplantation exercise training protocol was found valid and safe following renal transplantation. Tailor made programs could be developed with such graded exercise protocols after testing its impact on various health benefits in larger sample.

Keyswords: *Exercise training- Renal rehabilitation- Exercise protocol- Renal transplantation- Resistance training*

INTRODUCTION

Renal Transplantation (RT) is done in end-stage renal disease nowadays with improved graft functioning. In spite of limited organ supply from deceased donors, the frequency of RT is steadily increasing by Living Donor Renal Transplantation (LRRT) and organs swapping measures.[1-3] The reduction in Physical activity, QOL, and increased cardiovascular disease risks after RT emphasis the need for structured programs with exercise training and measures to improve Physical activity.[4] Even though many studies examined the utility of exercise training, no specific, structured protocols in renal rehabilitation have been published. Few centers have trailed with individual training methods using published guidelines.[5] American College of Sports Medicine (ACSM) guidelines of exercise testing and exercise prescription for chronic diseases recommend exercise training with tailor-made

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components for a safe and optimal clinical application.[6]

Various studies have shown development of impairments including Physical inactivity, reduction in QOL, Cardiovascular disease (CVD) risks, cancer, new onset Diabetes after transplantation (NODAT), obesity, sarcopenia, malnutrition and osteoporosis after RT. The initial benefits of successful RT fades with progressive functional impairments.[7-10]There are many recommendations in place to ameliorate these ill-effects with regular physical activity and exercise along with titration of medications as needed.[11] Explicit spelt out protocols of exercise training is not found in renal rehabilitation literature after RT. The guideline needs to be translated into applicable measures of training, which was sparse to note. The need to increase physical activity and exercise to attain all health benefits and to prevent/minimize possible complications after RT is well documented.[12]The barriers to exercise based renal rehabilitation including fear of graft injury, sociocultural restrictions, need for awareness of its importance among practitioners and necessary of team cooperation is widely described.[13-15]

METHOD

The Protocol development

The protocol development was a part of an ongoing study on exercise training effects after RT, which was approved the Institutional Ethics Committee (IEC/NI/11/DEC/26/83). The prevailing exercise guidelines and published studies were explored to identify the possible and needed components of training.[16]Most studies didn't spelt out all components of training, except duration and modes of training. Recently consensus on guidelines to report of exercise protocols is published wherein parameters description is suggested.[17]The present exercise protocol incorporated exercise parameters, precautions and patient education. The construction included generic and tailor-made components. The Structured Exercise Training Protocol after renal Transplantation (SET-ART) was done in Three Phases- Phase I: Acute care, Phase II: Phase Recovery, III: Progressive training which lasted up to 12 weeks after RT. The components of each phase, parameters of training and progression were framed based on guidelines and inputs from experts in field the renal rehabilitation. (Table 1)

Table – 1 Structured Exercise Training Protocol after renal Transplantation (SET-ART)

Acute Care-Phase I –Stage 1 and 2

Parameter	Activity	Intensity (RPE 6-9)	Frequency	Precautions	Progression
Bronchial hygiene	Breathing training, Incentive spirometer Chest percussions	600-1200 cc/sec	10-15 rpt/session 3sessions/day	breath hold ≤ 3 sec Spo2 >90% ,Change in BP ±10 mmHg	Multiple sniffs to single breath
Limb exercise	Active assisted to active movements, PROM (if-edema, inhibition present)		5-10 movements/ session	Drains, IV lines, fistula hand,Pain	Active participation
Mobilization As tolerated (2-15 min)	Turning in bed(assisted) Supported sitting	HR not >5-8 beats increase	Every 2h-4h	Drains, IV lines Drop in BP (if on epidural)	Reduction in external support
Education	Breathing exercises, Use of spirometer, importance of splinted coughing, need for ankle pumps & chest physio, Care of drains/ IV lines during turning/exercise				

PHASE II-3 to 6 weeks-RECOVERY PHASE and PHASE III-6 to 12 weeks-Progressive Training Phase

Mode	Activity	Intensity	Duration	Frequency	Precautions
Warm up & warm down	Ankle pumps, arm curl ups, spot marching with support	Rhythmic & slow	5-10 min	3-4 sessions/ Week	Suture site stretch
Aerobic	Walking/cycling	60-75% (Phase II) 75-90%(Phase III) HR max with RPE-11-14	10-20 min	3-4	HR ,BP periodic recording
Resistance training	Free weights Biceps curls, triceps Quads, ankle dorsiflexors	50-65% of 10 RM (Phase II) 65%-85% of 10 RM (Phase III)	3 -5 sets with 30-60sec pause	10-25 RPTS/ set	Avoid fistula hand RPE 11-14 maintained
Flexibility	Calf, quadriceps, l Latissimus - self stretch Comfortable stretch 5-20 sec hold without breath hold Prior to exercise Limits of pain & suture pliability Avoid loaded trunk bending				
Education	Phase II:HR, BP monitoring, RPE regulation, muscle fatigue/ cramps-to report any discomforts Phase III: Training with more rely on RPE regulation, muscle fatigue/ cramps-to report any discomforts, encourage increase in activity participation(ADL)-return to job anticipated(part-time), scar mobilization (if adherence found)				

Validation procedure

The feedback and content validation for all items in each component of exercise protocol was obtained from five members including one nephrologist, one surgeon and three physiotherapists all with minimum of 10 years of experience and expertise in patient care delivery. The approval was obtained by rating on a 5-points Likert scale with, 1= strongly disagree, 2=disagree, 3=neutral, 4= agree and 5= strongly agree. The components/items with score 4 or 5 was included, the components with score ≤3 was revised or omitted as per expert comment. The total number of 4 or 5 rating by the members was counted and the particular item/ component were considered valid to include only if 80% agreement was achieved, as described before.[16-20] In the present study, a component was valid only if 4 out 5 experts agreed with score of 4 or 5. The agreement was also sorted for parameters such as exercise progression, patient education contents, intensity, frequency and duration in each phase of training. Further the safety of the components was confirmed by clinical application on 10 patients, under close supervision with safety measures. Any event of hypotension (<100/70), severe Dyspnea(Grade III or IV), Oxygen desaturation (below 85%), syncope or fall, suture dehiscence, undue pain or fatigue (lasting more than 24 hours) were considered as adverse response during training. Patient feedback on ease of understanding, undue fatigue, and any adverse responses was also noted, if any.

Table 2 Expert agreement and Patient feedback on validity of various components of SET-ART

Component of Training	Expert Agreement (%)	Vitals instability	Adverse response/ feedback by patient
Bronchial hygiene	100	No	Nil
Limb exercise	100	No	Nil
Mobilization	100	No	Hypertensive response, which normalized in 3-6 weeks of training
Warm up & cool down	100	No	Nil
Aerobic	100	No	Nil
Resistance training	100	No	Nil, Muscle soreness in Phase II but resolved within 48 hours
Flexibility	80	No	Nil, Fear of suture stretch
Exercise Parameters	**Phase I**	**Phase II**	**Phase III**
Frequency	100	100	100
Intensity	100	80	100
Duration	100	80	100
RPE based Progression	100	100	100
HR based Progression	80	80	80
Patient education	100	100	100

RESULTS

The scoring by all five experts was tabulated and analyzed for agreement on validity of the components. There were nine components namely Bronchial hygiene therapy, limb exercises, mobilization, warm up/cool down, aerobic training, resistance training, flexibility, patient education and exercise parameters. Most of the component of training in each phase exhibited excellent agreement among the subject experts (Table 2).

The bronchial hygiene therapy, limb exercise, mobilization, warm up/cool down, aerobic training, RPE based progression and strengthening exercise had 100% acceptance. Modification in timing of flexibility exercises and intensity progression (resisted exercise) were needed in early stage of training. There was no remarkable adverse response and the heart rate, Blood pressure and oxygen saturation were within safe zone of training (Table 3).

Table 3 Change in Vitals during the exercise protocol, Mean ± SD				
	Heart rate (beats/minute)	**SBP(mmHg)**	**DBP9mmHg)**	**Oxygen saturation (%)**
Phase I	13.3±2.35	43.5 ±10	6.8 ±1.48	89.8±2.57
Phase II	14.5± 1.82	45.2± 5.4	5.8± 2.1	88.4± 1.92
Phase III	13.2± 1.78	38.3± 4.2	4.9± 1.4	90± 2.4

Among 30 items presented to validation, 28 items (including patient education and exercise parameters in all three phases) were found to be valid as shown by agreement within the experts.

DISCUSSION

The need for structured exercise protocol was felt by all the experts; hence they readily participated in evaluation. The bronchial hygiene therapy was well accepted due to the risk of infection due to induction therapy, immune suppression .The mobilization, limb exercise and graded strengthening had good agreement as suggested by previous studies. The need to address the muscle weakness in RT as noted issue, paved way for 100% approval.[11] The risk of fatigability, obesity, and ease of performance made acceptance of aerobic training.

Heart based exercise progression had an acceptable rating (80%), as few experts mentioned possibility of non- linear response due comorbidity such as diabetes and hypertensive response in early stages.[21, 22]The incorporation of Rating of Perceived Exertion had 100% agreement as well found to be clinically useful to do safe exercise progression. RPE is an established method to prescribe exercise intensity in most Cardio pulmonary rehabilitation programs, which was found true in this study also[23, 24]

Even though many studies report on training benefits after RT, lack of published details on exercise training parameters makes replication limited. The exercise parameters were scrutinized to develop a safe and effective protocol structure as recommended by consensus on reporting of study protocols.[17]This is perhaps first study to describe in detail the components and parameters of the training after RT. Moreover this study describes the early intervention (within three months of RT), which is sparse to note. Even though all items had good agreement and clinically safe in this study, it is required to be tested on larger sample before generalization of the effectiveness in rehabilitation after RT.

CONCLUSION

The Structured Exercise Training Protocol after renal Transplantation (SET-ART) was found safe and valid to be used following RT. The clinical utility in resolving post RT issues needs to be examined with further studies. The structured protocol could be used to frame tailor-made programs as per the needs of the individual among renal transplantation population.

Sources of Funding No funding obtained

Conflict of Interest Authors declare that they have no competing interests

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DOI Numher: 10.5958/0976-5506.2018.01351.7

Association of TNF-α with Fasting Glucose, Insulin and Insulin Resistance in Complete Glycemic Spectrum

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ABSTRACT

Background: The aim of the present study is to assess fasting glucose, fasting insulin, insulin resistance, and inflammation in complete glycemic spectrum and to study the association between them if any.

Materials and Method: Participants (30-50 years) of either gender were enrolled. Based on their family history of diabetes and glucose levels, they were grouped into normoglycemic non-first-degree relatives of diabetes, normoglycemic first degree relatives of diabetes, Prediabetes and diabetes. Fasting Glucose, Fasting insulin and Tumor necrosis α (TNF-α) concentrations were analyzed. Groups were compared using one-way ANOVA with LSD posthoc analysis. Correlation between the parameters were done using Pearson's correlation and linear regression analysis.

Results: We observed that fasting insulin, fasting glucose, TNF-α, and HOMA2 IR gradually increased as we moved along the glycemic spectrum from control, FDRD, prediabetes to diabetes, while HOMA2%S gradually decreased. HOMA2%B - there is an increase in FDRD as compared to controls, but it decreased in prediabetes and diabetes as compared to FDRD or controls. There was positive correlation between TNF-α and fasting glucose across the glycemic spectrum and no correlation with fasting insulin or insulin resistance.

Conclusion: Inflammation begins even in first degree relatives of diabetes and increases along with glucose levels along the glycemic spectrum.

Keywords: *First degree relatives of diabetes, prediabetes, HOMA2%B, HOMA2%S, HOMA2IR, HOMA-IR*

INTRODUCTION

Diabetes is increasing worldwide; Insulin resistance plays a significant role in the development of diabetes. Insulin resistance also leads to obesity, hypertension, dyslipidemia and cardiovascular diseases[(1)]. Hence, it requires earlier attention. In addition, to this, diabetes subjects display increased levels of inflammatory markers[(2)]. The underlying pathophysiology of diabetes development involves inflammation, which has been suggested by observing low-grade inflammation in subjects before developing diabetes[(3)]. One study documented the role of inflammatory markers in predicting the development of diabetes[(4).] TNF-α is one of the major inflammatory markers, produced by various cells such as, macrophages, T cells, neutrophils and monocytes. Moreover, exaggerated expression of TNF- α is associated with obesity related insulin resistance[(5)]. TNF-α causes metabolic derangements via various mechanisms - down regulation of genes involved in normal insulin action, targeting insulin signaling, inducing lipolysis and derangements of PPARγ, insulin-sensitizing nuclear receptor [(6)]. Few studies have narrated the potential role of TNF-α

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causing insulin resistance [7-9]. Increased levels of TNF-α has been documented in impaired glucose tolerance subjects [10, 11] whereas, some studies have not found any association [12]. Further, contradictory reports regarding the association of inflammatory markers with insulin resistance in first degree relatives of diabetes (FDRD) [13, 14] shows that the role of inflammatory markers causing insulin resistance is still inconclusive. Even though, studies have reported, the association of TNF- α with insulin resistance in diabetes [15, 16] and prediabetes [17], no studies have attempted to assess the role of TNF- α with insulin resistance in complete glycemic spectrum. Therefore, in the present study we aimed to assess the association of TNF- α with insulin resistance across the glycemic spectrum.

MATERIALS METHOD

This cross-sectional comparative study was conducted in Department of Physiology, JIPMER, Puducherry. Approval from institutes scientific and ethics committee was obtained for the study protocol. 160 participants in the age group of 30-50 years of either gender were enrolled for our study. Based on their family history of diabetes and glucose levels, obtained by history and oral glucose tolerance test respectively, they were grouped into normoglycemic non-first-degree relatives of diabetes (n=40), normoglycemic first degree relatives of diabetes (n=40), Prediabetes (n=40) and diabetes on oral hypoglycemic drugs (n=40). Subjects with organic disease, morbid obesity, hypertension and smokers were excluded from this study.

Biochemical markers: The fasting and postprandial blood glucose was estimated by glucose oxidase-peroxidase method (Genuine Biosystem). Fasting insulin and TNF-α were measured in plasma that had been drawn after an overnight fast and frozen at −80°C until assayed. Fasting insulin (DIAsource, Belgium) and TNF-α (Diaclone, France) concentrations were measured by enzyme-linked immunosorbent assay according to manufacturer guidelines.

We used the standalone version of the Excel spreadsheet implementation of the Homeostatic model assessment calculator - HOMA **Calculator** ©The University of Oxford 2013; The calculator uses the HOMA2 model that provides insulin sensitivity (HOMA2%S) and beta cell function (HOMA2%B) as percentage, where 100% is normal. This updated model accounts for variations in peripheral glucose and hepatic resistance and considers renal glucose loss too [18]. Hence can be used in hyperglycemic subjects and in subjects with high insulin section [19].

Statistical analysis: Comparisons of data across the groups were done using One-way ANOVA followed by post-hoc analysis using least significant difference (LSD). The statistically significance was set at $p<0.05$. Correlation between TNF- α and glucose, insulin, and derived insulin indices was done using Pearson's correlation and linear regression.

RESULTS

Table 1: Comparison of insulin, glucose, TNF-α, and HOMA2 parameters

Parameters	Control (n=40)	FDRD (n=40)	Prediabetes (n=40)	Diabetes (n=40)	ANOVA P value
	Mean±SD	Mean±SD	Mean±SD	Mean±SD	
Fating Insulin (μIU/mL)	8.75±6.84	11.30±8.70	18.62±19.62	30.13±33.65	<.001
Fasting glucose (mg/dL)	86.75±9.25	89.35±6.53	114.05±6.81	158.75±15.84	<.001
TNF-α	9.78±7.11	15.02±11.93	19.50±19.70	37.15±39.57	<.001
HOMA2%B	108.72±66.72	119.87±60.25	101.35±65.46	83.56±76.36	.110
HOMA2%S	182.41±235.84	111.23±73.62	75.77±55.39	51.96±37.96	<.001
HOMA2IR	1.11±0.85	1.44±1.08	2.44±2.39	4.02±3.98	<.001

Fasting glucose, Fasting glucose, TNF alpha, HOMA2 %S and HOMA2IR were significantly different across the groups, while HOMA2%B was not significantly different across the groups (Table 1).

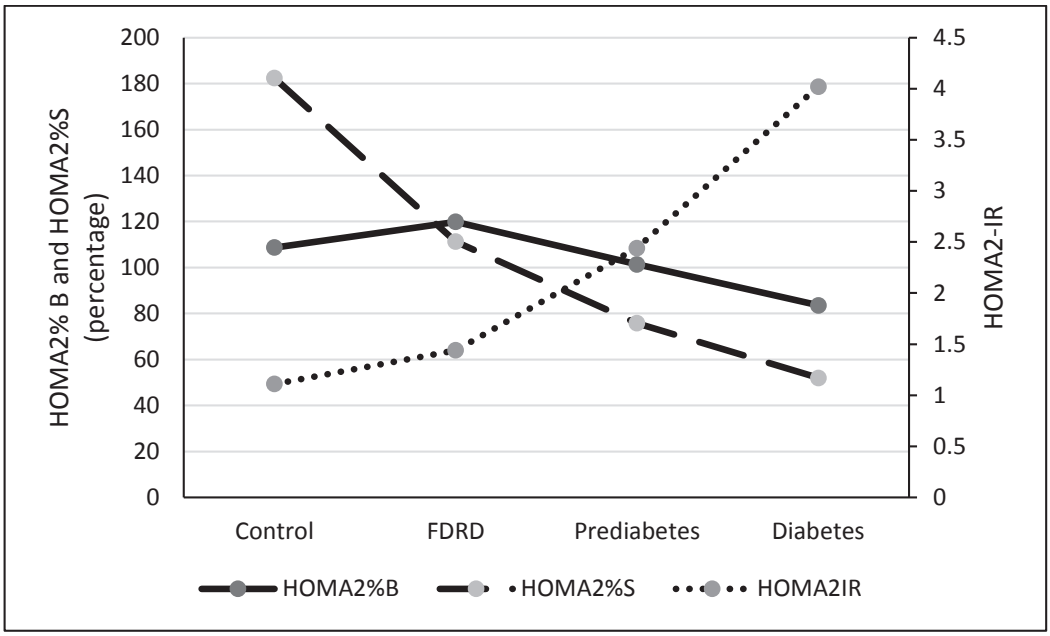

Figure 1: Relationship between insulin indices in the complete glycemic spectrum

From the values we can observe that Fasting insulin, fasting glucose, TNF-α, and HOMA2 IR gradually increases as we move from control, FDRD, prediabetes and diabetes, while HOMA2%S gradually decreases. HOMA2%B there is an increase in FDRD as compared to controls but decreases in prediabetes and diabetes (Figure 1 and Table 1).

Table 2: Comparison of Fasting insulin, fasting glucose, TNF-α, HOMA2 parameters – post-hoc analysis p values.

Parameters	Control vs FDRD	Control vs Prediabetes	Control vs Diabetes	FDRD vs Prediabetes	FDRD vs Diabetes	Prediabetes vs Diabetes
Fasting Insulin (μIU/mL)	.574	.031	<.001	.108	<.001	.012
Fasting glucose (mg/dL)	.261	<.001	<.001	<.001	<.001	<.001
TNF-α	.313	.062	<.001	.388	<.001	.001
HOMA2%B	.461	.626	<.001	.221	.017	.240
HOMA2%S	.014	<.001	<.001	.217	.407	.407
HOMA2IR	.545	.016	<.001	.068	<.001	.004

Post hoc analysis (Table 2): As compared to controls all the parameters (Fasting Insulin, Fasting glucose, TNF alpha, HOMA2%S, HOMA2 %B and HOMA2 IR) were significantly different in diabetes, except for HOMA2%B prediabetes group was also significantly different in all parameters, while FDRD was significantly different only in HOMA2%S while other parameters were comparable. As compared to FDRD diabetes were significantly different in all the parameters except for HOMA2%S, while prediabetes was significantly different only in glucose values. Prediabetes and diabetes groups were comparable based on HOMA2%B and HOMA2%S, while other parameters are significantly different.

Table 3: Pearson's correlation between insulin, glucose, derived insulin indices with TNF-α

Parameters	r value	TNF-α
Fasting Insulin (μIU/mL)	0.106	.181
Fasting glucose (mg/dL)	.414**	<.001**
HOMA2%B	-0.122	.126
HOMA2%S	-0.113	.156
HOMA2IR	0.129	.104

TNF-α shows significant positive correlation with fasting glucose (r = .414, p < .001, n =160) (Table 1 and Figure 1). There was no correlation between TNF-α, fasting insulin, HOMA2%B, HOMA2%S, and HOMA2IR (Table 3).

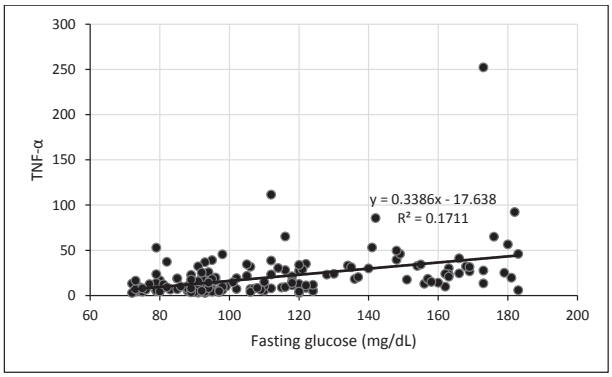

Figure 2: Correlation between TNF-α and fasting glucose

On regression analysis with TNF-α as dependent factor and fasting glucose as independent factor: TNF-**α** (pg/ml) = 0.3386 fasting glucose (mg/dL) -17.638. Only 17% of the changes in TNF-α could be explained by fasting glucose. After removing the seemingly outlier value of TNF-α (value - 252), we observed that correlation was more between TNF-α and Fasting glucose (r = .444, p < .001, n =159). However, on regression analysis only 19% (increase of 2%) of the changes in TNF-α could be explained by fasting glucose.

DISCUSSION

Diabetes is reported to be an immune mediated disease-causing cytokine mediated acute phase response and low-grade chronic inflammation leading to atherosclerosis and other complications [20]. TNF-α contributes in the development of insulin resistance, diabetes and altered adiposity [21]. Contradictory to this study one study have reported no association of inflammation in early insulin resistant state among non-obese first degree relatives of diabetes [22]. In view of these studies, it is essential to identify the association of TNF- α and insulin in complete glycemic spectrum.

Increasing TNF-α trend in the complete glycemic spectrum (Diabetes>Prediabetes> FDRD>Control group) suggests that low-grade subclinical inflammation starts even before the disturbance in glucose homeostasis (TNF-α: FDRD > control group), if there is a positive family history of diabetes. Inflammatory marker (TNF-α) have shown no correlation with insulin or insulin derived indices in our study. Whereas, we observed positive correlation with fasting plasma glucose. De Carvalho VF et al also have reported, association of hyperglycemia with inflammation, which agrees with our study findings [23]. The elevated levels of inflammatory marker and insulin prevails in diabetes regardless of their treatment (oral hypoglycemic agents). Despite the elevated levels of inflammatory marker and insulin there is no association between these two parameters with which we hypothesize that, severity of other pathophysiological mechanisms such as family history of diabetes, hyperglycemia, hyperinsulinemia [24, 25], body fat mass, glucose toxicity [24, 26] involved in insulin resistance could have masked the association of TNF- α and insulin resistance. Similar hypothesis is reported by another study which failed to show correlation between TNF- α and insulin resistant state in normoglycemic subjects [17]. Even in diabetic individuals, Darko et al have reported varying levels of TNF- α and IL-6 depending on demographic status (urban and rural) and hypothesized that it could be due to varying physical activity levels and body composition [27]. Even in our study only 17% of the variation in TNF-α could be explained by glucose levels.

Existing literature have documented insulin resistance in young lean subjects with family history of diabetes [28] which suggests the role of family history and no association between inflammation and insulin resistance among first-degree relative of diabetes [22]. This emphasizes the potential role of heritability leading to insulin resistant state rather than inflammation. These earlier suggestions support our study findings. Memon *et al*. have reported that among except for IL-6 no other cytokine (IL)-1β, IL-2, IL-4, IL-5, IL-6, IL-10, IL-12 (p70), IL-13, interferon-γ and TNF- α showed association with insulin sensitivity [29]. In a similar study, Herder et al have concluded that subclinical inflammation (IL-6,

hscrp) is associated with increased insulin resistance and fasting insulin levels even in non-diabetic individuals [30]. However, they have not measured TNF- α. The lack of association between TNF- α and insulin resistance/ fasting insulin might be due to the modest sample size in our study groups.

A study from Korea documented that concentration in serum TNF-α in prediabetic subjects were comparable with control group [12], which is in accordance with our study findings. This could be due to exclusion of morbid obese subjects in our study, because the major source of TNF-α is from adipocytes [31]. However, non-significant elevation of TNF- α and significant hyperglycemic state indicates that subjects with prediabetes have high risk for developing cardiovascular disease and diabetes respectively.

Hyperglycemic condition is associated with increased oxidative stress which in turn induces redox-sensitive major pro-inflammatory transcription factor nuclear factor kappa B (NFκB), leading to inflammation [32, 33]. From our study findings, we could say that, hyperglycemia have been implicated in the process of inflammation than insulin resistance across glycemic spectrum. Taken together, the relationship between hyperglycemia, oxidative stress and inflammation is analogous with bidirectional causation. Although, we could not find any significant association between insulin resistance and TNF-α. The increasing trend of insulin levels and TNF-α in FDRD, prediabetes and diabetes imply the influence of heritability and shows that the inflammatory cascade pathway and insulin resistance pathway occurs simultaneously with a missing link which remains unresolved.

Conclusion: Inflammation begins even in first degree relatives of diabetes and increases along with glucose levels along the glycemic spectrum.

Limitations: There are various confounding factors such as physical activity level, level of stress, occupation that could have influenced the level of inflammation in the study subjects which were not matched.

Source of funding: JIPMER Intramural funding and extramural funding from Research Society for Study of Diabetes in India (RSSDI).

Disclosure: We are presenting here only a part of a larger PhD project

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DOI Numher: 10.5958/0976-5506.2018.01352.9

Inter-Professional Education and Collaboration in Dentistry – Current Issues and Concerns, in India: A Narrative Review

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ABSTRACT

Aim: The aim of this review article is to address the issues and concerns regarding Inter-Professional Education and Collaboration in Dentistry from an Indian perspective.

Background: The field of Dentistry, Dental Sciences and Dental Education in the 21st century is evolving at a brisk pace with many professional developments in the Indian Scenario. To cater to this need and change, our methods of teaching and practicing dentistry should evolve. This is where the practice of Inter-Professional Education and Collaboration (IPEC) fits aptly and adds great value. **Clinical Significance:** Adopting this practice will not only hone the skills of a dentist but also allows us to learn from other professionals, gaining a deep insight into their methodologies. It enables us to take a look at situations through a bird's eye view for comprehensive assessments and improved health outcomes.

Keywords: *Inter professional education, dentistry, collaboration, issues, India*

BACKGROUND

Inter-Professional Education(IPE) is an approach where two or more professions learn about, from and with each other to improve collaboration and the quality of care.[1] To improve the future of dental care we need to adapt accordingly[2] so that IPEC becomes a priority for all resulting in improved health outcomes for all patients, including the poor and underserved.[3] Adopting these practices is beneficial in building teamwork, communication, professionalism and also the confidence in managing different patients. It is based on a healthy understanding and respect for a multi-disciplinary approach while promoting sharing of professional perspectives and resources. IPEC has many advantages : Encouraging professionals to work in diverse situations, exposing them to a variety of patients; sharpening one's critical thinking skills; promoting a deeper understanding and respect for the other healthcare professionals to work as a single, working unit[4]; stresses on evidence-based care, risk assessment and its subsequent management.

The practice of IPEC has four basic principles.

1. Respect for Inter-Professional Practice.

2. Responsibilities of a professional working in a multidisciplinary team.

3. Effective communication between the members of the team.

4. A collective effort by the group.

Eventually, the practice of IPEC will not be limited to just being learnt in classrooms but will be practiced in clinical scenarios in a most efficient way after overcoming various problems.[5]

REVIEW RESULTS

A curriculum with component of IPE/IPC should be started at the grass root levels. Conclusions from studies

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already observing clinicians and students participating in such a model reported that it significantly increased their understanding of patients as they could observe things from the perspective of other health-care professionals as well. It also has a positive influence on their problem solving abilities, communication, and collaboration and provides a unique experience.

IPEC is needed now because –

1) Increased awareness about the fact that the oral cavity is a mirror to the rest of the body as most of the diseases are reflected in the mouth first;

2) With an increase in the average life expectancy, geriatric dentistry is being practiced more, which often needs a multi-disciplinary approach as multiple problems are expected; in old age.

3) An increased incidence of chronic diseases justifies the need for an inter disciplinary team to make decisions;

India is slowly catching up with the trend of IPEC and we hope that in the coming years it will be established as one of the supporting pillars of the Healthcare in India. Institutions have started offering fellowships in India providing a greater insight into IPEC. Surely, in the future, when the healthcare society looks back in retrospect, they will agree that IPEC was a blessing at the right time to the health care industry and patients.

DISCUSSION

Areas which need collaboration:

The need for adopting IPEC into the current system of teaching and practice has arisen as it has been realized that the oral cavity is not an isolated organ but an intricately connected one. An aging population, the shift of the burden of illness from acute to chronic care, and the lack of access to basic oral care demand that such a practice be adopted.[6]

A) Pediatric dental care:

Pediatric dental care requires a multidisciplinary approach by healthcare professionals in order to provide both primary as well as comprehensive care to infants and children through adolescence.[7] Oral healthcare is usually independent from pediatric healthcare. It has been observed that about 90% of the infants up to the age of 1 year have seen a pediatrician but only 2% of those have seen a dentist. If both of them are a part of an Inter-Professional collaborative team, visits to the pediatrician are excellent opportunities to assess the oral health of the infant, apply fluoride and also to educate the parents on the importance of maintaining proper oral hygiene from childhood itself. Dental schools providing didactic courses along with clinical experience to train dentists and other pediatric healthcare providers have successfully bridged the gaps that occur between these professions thereby improving the standard of care for the infants and children from the very first day.

B) Chronic diseases:

Chronic disease management requires a dedicated team of healthcare professionals as these diseases target many organs and organs systems including oral cavity and one symptom cannot be treated in isolation without managing the others. The team working together should be able to coordinate the patient's care by working as a tightly knit unit and will provide the best-possible treatment plan for such patients.[8]

Improving the patient's oral health also leads to an improvement in the patient's overall systemic health. While there is a clear-cut relationship between diabetes and periodontal disease, we should also acknowledge the fact that due to the complex nature of diabetes, the disease affects other organ systems as well too. The need for collaboration is also required for other diseases such as Cardio Vascular diseases, malignancies, mental health disorders like schizophrenia/ psychosis, etc. IPEC is a positive platform for facilitating medico-dental training in order to best serve the society and successfully treat such complicated diseases.

C) Geriatric Dentistry

Oral health for the geriatric patient is essential for the patient's comfort, function and is an important component of overall systemic health. A decline may lead to pain, loss/reduction in function and subsequently a decreased quality of life. An increase in age, also leads to impairment of their mental abilities making it hard for them to maintain their oral health and hygiene. They are additionally burdened with a cocktail of other co-morbidities which cannot be tackled by a single healthcare professional alone. A sincere collaborative effort by the wide range of healthcare professionals like physicians, psychologists, physiotherapists, and dentists is required for optimal geriatric care.

Limitations and challenges :

Implementing this model is limited by one fundamental question: How do we apply what we've learnt in the classroom to the clinical scenario. The most important challenge that India faces before successfully establishing an IPEC model is to explain and to stress upon the healthcare professionals the importance and scope of such a model in real life practice. Traditional dental schools do not integrate such a practice in their curriculum and do not adequately prepare the future dentists to provide comprehensive care to their patients. When exposed to IPEC models during their course, it will not only impress upon them the advantages of such a model but will also help them in adopting it in their practices.[9]

The logistics involved in setting up of such a model in a currently existing study program pose another challenge to the setting up such a practice successfully. The most common ones are changing the timings of the semester, the curricula and class schedules. Most of the institutions do not have their medical and dental institutions on the same campus. It places a challenge on the school authorities to find a suitable time and location for training various healthcare professionals for training them. [10]

It requires support from the local health-care units, the professionals involved and a lot of investment of resources in the setting up of such a team. It can be solved if the collaborative model receives support from the local authorities which would benefit everyone.[11,12]

A bridge needs to be made to gap the separate systems of dental and medical education so that the healthcare professionals are trained to examine the oral cavity adequately in order to screen for oral systemic complications or to educate the patient about the importance of maintaining good oral hygiene. [13]

Professional identity is another barrier to implementation of inter-professional collaboration. A sense of professional identity must be instilled in each of the health-care providers which leads to an increase in confidence of the professionals and enables them to act as a part of a team. At the same time, while stressing their importance to the team, they must also give up their professional autonomy and accept the fact that a team decision is eventually the best decision.[14] A diverse team must be set up with representation from all the healthcare professions. Each professional should not only treat patients in their own way but also teach their methodology to others. Furthermore, importance of dental health must be stressed to the others in the team so that individual barriers of identity are overcome.[15]

The Indian Scenario:

In India, IPEC is still in the budding stage. It needs to rest on the shoulders of health care professionals who believe that IPEC is the future. For the very first time in India, Manipal Academy of Higher Education has started a fellowship program MAHE-FAIMER International Institute for Leadership in Inter-Professional Education.[16]

The objectives of the program are: 1) To encourage faculty understanding of IPE and practice; 2) To implement collaborative projects in IPE that are relevant to the health needs of the community; 3) To develop faculty who will be leaders in the practice of IPE.

Lessons to be learnt from North America :

Dental schools in the US and Canada have implemented IPEC in their curriculum and their everyday practice. It not just the implementation of such a model that is to be learnt , but the competency with which they are carried out too.[17] A lot of these models form an effective collaboration between dentists and dental hygienists, calling upon them to provide services and care by effectively participating as an Inter-Professional team.[18] These models should be constantly evaluated on a periodic basis to assess for their efficacy. [19]

To successfully implement an IPEC model, there must be full logistical support from the administrative personnel, personnel solely dedicated to the model, adequate participation from faculty, adequate number of specific cases for training of students and faculty and regular assessment of the participants.[20]

There is a lot more that we can learn from the recent developments, before IPEC can become a part of routine clinical practice in India. Eventually, we should be able to address the challenges of the world and welcome this practice.[21]

CONCLUSION

Inter-Professional Education and Collaboration is not just when two or three healthcare professionals

come together to work as a group. It is a model where the healthcare professionals working together share a mutual sense of respect for each other's profession and out of that respect, they realize that the other person's perspective is also a major part of the solution. It needs multiple approaches to provide the best possible treatment for the patient when everyone participates with a sense of responsibility.[22]

Faculty conditioning for development of an IPEC model aims to bring about awareness at the individual and the organizational level. Clearly, faculty members play a critical role in the teaching and learning of IPE and they must be prepared to meet this challenge.[23]

The butterfly effect is the sensitive dependence on initial conditions in which a small change in one state of a deterministic nonlinear system can result in large differences in a later state. Inculcating the model of IPEC into our practices, we will be improving the patient's oral health in ways that will directly have a significant positive effect on the patient's overall health. This change will mark the ushering in of a new era that will propel dentistry into greater heights. It is in line with Darwin's proposal of "Survival of the fittest". In order to survive the test of time, we need to adopt this practice. Studies have shown that professionals who have been a part of Inter-Professional collaborations came out to be more amicable, courteous, having a greater command of their communication skills and also have acute powers of critical analysis along with the fact that they enthusiastically embrace such models in practice.[24] Such individuals have a greater respect for their fellow healthcare providers and often end up being pioneers in their chosen fields. It also instils a sense of collective responsibility in the team where each and every one of them acknowledges that all of them are responsible for the outcome, irrespective of whether it is positive or negative. Not only does it instill more confidence in the healthcare provider, but also changes their attitude.[25]

Ethical Clearance: Not indicated

Source of Funding: Self

Conflict of Interest: None

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DOI Numher: 10.5958/0976-5506.2018.01353.0

Heart Rate Variability Non-Linear Analysis by Poincare Plot in the Complete Glycemic Spectrum

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ABSTRACT

Background: Prevalence of autonomic dysfunction in diabetes imposes marked cardiovascular risk in them. Heart rate variability (HRV) denotes the status of cardiovascular health. The present study was undertaken to study HRV using Poincare plot in the complete glycemic spectrum.

Materials and Method: We grouped the participants of either gender in the age group of 30-50 years based on their glycemic status and family history into four groups - 1. Normoglycemic subjects without family history of diabetes (control), 2. First degree relatives of diabetes, 3. Prediabetes, and 4. diabetes. We measured anthropometric variables, blood pressure and heart rate. We recorded lead II ECG and analyzed the RR interval using Poincare plot method. Groups were compared using one-way ANOVA followed by Bonferroni correction post-hoc analysis

Results : We observed that Poincare plot values such as SD1, SD2, SD1/SD2 ratio and S showed decreasing order as follows Control > FDRD> prediabetes > diabetes

Conclusion: heart rate variability decreases as the blood glucose value increases or even if you at risk for diabetes as with first degree relatives of diabetes.

Keywords: *HRV, Poincare plot, autonomic dysfunction, glycemic spectrum, diabetes, T2DM*

INTRODUCTION

Diabetes is a prevalent disease and major medical health burden. The incidence of type 2 diabetes mellitus is increasing globally. It is predicted that by the year 2025, diabetes incidence will increase two times than the year of 2000 [(1).] Diabetes has been associated with cardiovascular autonomic dysfunction in the form of vagal withdrawal and increased sympathetic tone subsequently causing sympathetic denervation [(2-4).]

Heart rate variability (HRV) is a non-invasive tool to assess the cardiac autonomic function [(5).] Conventionally, there are two methods for HRV analysis, linear and non-linear methods. Heart rate (HR) regulation by autonomic nervous system engages complex interactions between electrophysiological, humoral and hemodynamic parameters [(6)]. In this view, heart rate is known to have nonlinear trends [(7-9).] Nonlinear analysis of HRV have been documented to evaluate the quality, scaling and correlation characteristics of the signals of variability and they do not assess the magnitude of variability [(10)]. Non-linear method reflects interactions of central neural and autonomic nervous system [(5).] Poincare plot is a non-linear component which reflects the non-linear dynamics of HRV [(11)] and entire RR time series in a single

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diagram[12]. This approach of HRV quantification have recently emerged to disclose the non-linear alterations in heart rate which is not obvious. Many method of calculation have been suggested by many researchers for calculating Poincare plot [13-15]. But, in this study we will present the Poincare plot scatter gram of our study group.

Many studies have assessed the linear methods in glycemic spectrum [16-18] but, no studies have assessed the nonlinear dynamics of HRV in complete glycemic spectrum. Therefore, in this study, we assessed especially the nonlinear dynamics of HRV using Poincare plot in complete glycemic spectrum.

MATERIALS METHOD

The present study is cross-sectional comparative study. After obtaining scientific and ethics committee approval. We screened volunteer subjects willing to participate in our study for their glycemic status using oral glucose tolerance test after obtaining written informed consent. Subjects with age between 30 to 50 years of either gender has been included for our study. We classified the participants into four groups based on their glycemic status and family history of diabetes – 1. normoglycemic non-first-degree relatives of diabetes (n=50), 2. first-degree relatives of diabetes (n=50), 3. Prediabetes (Fasting plasma glucose >100mg/dL and <125 mg/dL) (n=50) and 4. diabetes (n=50). We excluded subjects with any organic disease or smoking or overweight or morbid obesity or hypertension or under insulin treatment. Recording for female subjects was done during follicular phase of their reproductive cycle to avoid the influence of sympathetic overactivity during luteal phase [19, 20].

Patient preparation: Subjects were requested to report to Obesity research laboratory of physiology department at between 8 AM- 11AM. On the day of recording, we have asked the subject to come with light breakfast, we also instructed them to avoid caffeinated beverages (12 hours before the test), nicotine (12 hours before the test) and vigorous physical activity. We maintained thermoneutral temperature (25°C) throughout the procedure. The procedure of recording lead II ECG was explained, and lab orientation was given prior to the recording to alleviate anxiety.

We measured their height (cm), weight (Kg), resting heart rate, systolic blood pressure (SBP) and diastolic blood pressure (DBP). We measured subjects, height (cm) using wall mounted stadiometer (VM electronics Hardware Ltd), weight (Kg) using digital weighing machine (Charder Electronic Co Ltd, Taichung, Taiwan 2013) and they were asked to take rest for 10 minutes in sitting position. Following which, we recorded resting heart rate and blood pressure using automated blood pressure monitor (Omron, HEM 7203 model, (Omron Healthcare Co., Kyoto, Japan).

Poincare plot: We followed guidelines formulated by Task force of the European Society of Cardiology and the North American Society of Pacing and Electrophysiology [5]. After 5 minutes of supine rest, lead II electrocardiography (ECG) was recorded for 5 minutes. The conversion of analog to digital signal was done using 16 bit, 16- channel data acquisition system with Acqknowledge 3.8.2 software (Biopac MP36, USA). The sampling rate was 500 Hz and band pass filter of 2 Hz to 40 Hz was used. From the RR tachogram Poincare plot analysis was computed using Kubios 1.0 software (Bio-signal analysis Group, Finland) and the following parameters were noted.

SD1 is the standard deviation of short-term instantaneous beat-to- beat RR interval variability (minor axis of the ellipse in the diagram)

SD2 is the standard deviation of the long-term R-R interval variability (major axis of the ellipse in the diagram) [21, 22]

S: is the area of the ellipse which is the product of π, SD1, SD2. This reflects the overall dispersion and thereby the total HRV [23]

SD1/SD2: Represents randomness of HR [24, 25]

SD2/SD1: Correlates with LF/HF ratio. The ratio was positively correlated with Low Frequency (LF) and negatively correlated with High Frequency (HF) [26].

Statistical analysis: All the data were tested for normality. All parameters were normally distributed and are expressed as mean ± standard deviation. Comparison between groups were done using One-way ANOVA followed by posthoc test using bonferroni correction. All analyses were two-tailed and a significance level of $p<0.05$ was used in the study.

RESULTS

Table 1: Comparison cardiovascular parameters across the glycemic spectrum

	Control	FDRD	Prediabetes	Diabetes	p value
	Mean ±SD	Mean ± SD	Mean ± SD	Mean ± SD	
HR (beats per minute)	72.60 ± 9.15	75.60 ± 9.90	79.88 ± 12.38	80.12 ± 9.63	.001
SBP (mm Hg)	105.24 ± 8.02	103.14 ± 9.22	104.34 ± 8.97	104.18 ± 9.85	.715
DBP (mm Hg)	80.76 ± 3.59	81.04 ± .3.53	80.20 ± 3.26	80.26 ± 3.72	.581

Values are expressed in Mean ± SD. Statistical analysis was done using one-way ANOVA.FDRD-First degree relatives of diabetes, HR-Heart rate, SBP- Systolic blood pressure, DBP- Diastolic blood pressure.

Table 2: Comparison of nonlinear dynamics of heart rate variability across the glycemic spectrum

Poincare plot parameters	Control Mean ±SD	FDRD Mean ± SD	Prediabetes Mean ± SD	Diabetes Mean ± SD	p value
SD1	52.80±42.80	31.72±18.66	24.40 ± 19.13	17.75 ± 14.40	<.001
SD2	86.21 ± 43.17	63.66 ± 30.57	48.49 ± 28.60	44.94 ± 27.24	<.001
SD1/SD2	0.57 ± 0.18	0.49 ± 0.11	0.48 ± 0.18	0.39 ± 0.14	<.001
SD2/SD1	1.92 ± 0.60	2.18 ± 0.56	2.35 ± 0.80	2.99 ± 1.30	<.001
S	19480.50 ± 31205.73	7936.67 ± 8174.51	5094.41 ± 6292.97	3570.16 ± 6499.01	<.001

Values are expressed in Mean ± SD. Statistical analysis was done using one-way ANOVA. SD1: minor axis of elipse, SD2: Major axis of ellipse, S is area of the ellipse.

Table 3: Post hoc analysis using Bonferroni correction test for Poincare plot variables

		FDRD	Prediabetes	Diabetes
control	SD1	.001	<.001	<.001
	SD2	.005	<.001	<.001
	SD1/SD2 ratio	.046	.033	<.001
	SD2/SD1 ratio	.821	.087	<.001
	S	.004	<.001	<.001
FDRD	SD1		.989	.051
	SD2		.136	.030
	SD1/SD2 ratio		1.000	.011
	SD2/SD1 ratio		1.000	<.001
	S		1.000	1.000
Prediabetes	SD1			1.000
	SD2			1.000
	SD1/SD2 ratio			.016
	SD2/SD1 ratio			.002
	S			1.000

FDRD-First degree relatives of diabetes, HR-Heart rate, SBP- Systolic blood pressure, DBP- Diastolic blood pressure, SD1:minor axis of ellipse, SD2: Major axis of ellipse. Comparison between the group was done using Bonferroni correction test.

Table 1: Groups were comparable based on systolic and diastolic blood pressure. Heart rate was significantly different among groups based on One-way ANOVA. On post hoc analysis it was observed that HR of control was significantly higher than prediabetes (p = .003) and diabetes (p = .002) while it was comparable with that of FDRD (p = .891). All the other groups were comparable based on HR.

Table 2: Groups were significantly different in all the parameters of Poincare plot analysis (SD1, SD2, SD1/SD2, SD2/SD1, and S) based on one-way ANOVA. We observed that SD1, SD2, S and SD1/SD2 values decrease and SD2/SD1 value increase as we progress in the order of Control group, FDRD, prediabetes and diabetes.

Table 3: On post hoc analysis SD1, SD2, SD1/SD2 ratio, S was significantly higher in control as compared to FDRD, prediabetes and diabetes group, while SD2/SD1 was significantly lower in control group as compared to diabetes alone.

FDRD and prediabetes groups were comparable based on all the parameters. SD1, SD2, SD1/SD2 ratio was significantly higher and SD2/SD1 was significantly lower in FDRD as compared to diabetes group.

SD1/SD2 ratio was significantly higher and SD2/SD1 was significantly lower in prediabetes as compared to diabetes group, while other parameters were comparable.

DISCUSSION

In this study, among the baseline cardiovascular parameters (HR and blood pressure), HR was significantly elevated in prediabetes and diabetes compared to control group. The increase in resting heart rate denotes vagal tone deterioration, because resting HR regulation is influenced by vagal tone [27]. Comparable blood pressure across the groups denotes sympathetic denervation, across the group is yet to progress, as blood pressure is predominantly regulated by sympathetic tone [28].

In the present study, we found that control group have shown higher S, which is positively correlated with total HRV and SDNN (time-domain variable which reflects parasympathetic activity) among the four groups indicates physiological autonomic homeostasis. A similar finidng was reported by Toichi et al [26]. The significantly lesser S among FDRD, prediabetes and diabetes than control group emphasizes the autonomic dysregulation in these groups.

Bernnan M et al have documented positively association between SD1 and RMSSD (time-domain analysis parameter, which reflects parasympathetic activity) because there was similar mathematical equivalent for these two parameters in spite of their different origin [29]. Hence, SD1 is similar to RMSSD, which is proven as an index of short-term HRV [5, 30, 31]. We observed higher SD1 in the following order control> FDRD> prediabetes> diabetes, which signifies that parasympathetic tone decreases with hyperglycemia in graded manner [32].

SD2 can be used as a surrogate marker of sympathetic activity because the relationship between SD2 and Low Frequency (LF) (Frequency domain parameter, which denotes sympathetic activity) is double the relationship of SD2 with High Frequency (HF) (Frequency domain parameter, which denotes parasympathetic activity) [33]. We observed SD2 decreases in the following order control> FDRD> prediabetes> diabetes, which signifies that sympathetic tone decreases with hyperglycemia in graded manner. This is the consequence of progressive reduction of total HRV as evident by decreased S in the same order, which displays future cardiovascular risk in FDRD, prediabetes and diabetes. This is further supported by SD1/SD2 ratio which also decreases in the following order control> FDRD> prediabetes> diabetes. This shows that decrease in SD1 (parasympathetic) is more than decrease in SD2 (sympathetic) as hyperglycemia progresses resulting in relative sympathetic overactivity.

We found reduced SD1 in FDRD, prediabetes diabetes than apparently healthy subjects and the similar findings (reduced SD1 in diabetes alone) have been documented in a study carried out in UAE [34]. Also, our study demonstrates higher SD2 in FDRD, prediabetes and diabetes than control group which reflects sympathetic overactivity. Roy Bhaskar et al reported lower SD1 and higher SD 2 in diabetes which is in agreement with our findings [35].

Available evidences have reported the similarity of SD2/SD1 ratio with LF/HF ratio (marker of sympathovagal balance) [26, 36]. Our findings suggest that, SD2/SD1 is significantly more in diabetes than FDRD, prediabetes and control group which indicates sympathetic over activity or vagal tone attenuation. Few researchers use reciprocal of these variables as a tool to assess randomness of the heart rate over sympathovagal balance [24, 25]. Whereas, in our study, we found significant reduction in SD1/SD2 ratio in FDRD, prediabetes and diabetes than control group which could be due to reduced variability of heart rate among these groups indicating risk for future cardiovascular event. Many studies have demonstrated Poincare plots in diabetes and healthy subject [34, 35, 37], but these studies did not studied the entire glycemic spectrum which could have helped to identify the point of deterioration of autonomic homeostasis.

CONCLUSION

Total HRV(s), parasympathetic tone (SD1) and sympathetic tone (SD2) progressively decreases and relative sympathetic tone (SD2/SD1 and SD1/SD2) increases as we progress from normoglycemic controls, positive family history of diabetes, prediabetes to diabetes.

Limitations: Firstly, we studied only modest sample size. Secondly, our study is cross-sectional comparative study. Thirdly, we have done the nonlinear analysis using short-term HRV hence, our findings may not be applicable for long-term recording. Fourth, subgroup analysis was not done based on gender.

Ethical Clearance: We have obtained Institute Ethics committee clearance from JIPMER, Puducherry.

Source of Funding: JIPMER Intramural funding and extramural funding from Research Society for Study of Diabetes in India (RSSDI).

Conflict of Interest: None declared

Disclosure: We are presenting here only a part of a larger PhD project

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DOI Numher: 10.5958/0976-5506.2018.01354.2

Knowledge and Perception of Nutrition and Health among Pregnant Women in Rural Central Kalimantan, Indonesia

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ABSTRACT

Background: Optimum nutrition for pregnant women is necessary for the healthy growth of the fetus including brain growth. For pregnant women can apply a balanced diet of food then they need sufficient nutritional knowledge to apply balanced nutrition in the daily menu. The purpose of this study to understand the knowledge and perception of pregnant women related to food and health.

Method: Using a qualitative research method, implemented in Sei Hanyo Village, Supang Village, and Bulau Ngandung Village, Kapuas Hulu area, Central Kalimantan. Data was obtained by observation technique and an in-depth interview with 34 participants, consisting of pregnant mothers (9 people), grandmothers (12 people) and husbands (12 people).

Results: Most of the menu of pregnant women is less balanced because pregnant women rarely consume vegetable and fruit. Furthermore, they still have the wrong perception about the nutritional needs of pregnant women. Most women have consumed liver, eggs, and fish but for iron tablets, almost all participants do not know the benefits and the diet rules. Food abstinence is still applied mainly by pregnant women with various sources of taboo such as the source of animal side dishes and vegetables. Hand washing habit has been done but not to use soap in running water. Besides, the role of the husband in supporting the fulfillment of nutrition in pregnant women is still low.

Conclusion: Maternal knowledge and perception related to nutrition and health are relatively low.

Keywords-*: Perception, Nutrition, Health, Abstinence, Iron Tablet, Pregnant Mothers*

INTRODUCTION

Knowledge of nutrition is a set of knowledge known about food concerning optimal health. Nutrition knowledge includes an understanding of daily selection and consumption well and provides all the nutrients needed for normal body function(1). The level of knowledge of nutritional effect on attitudes and behavior in the selection of food will ultimately affect the nutritional state concerned. Inadequate nutrition knowledge, lack of understanding of good eating habits, as well as a lack of knowledge of the nutritional contribution of different types of food will lead to problems with intelligence and productivity. Increased nutrition knowledge can be done by running nutrition education programs conducted by the government. Nutrition education programs can affect the knowledge, attitudes, and behavior of children to their eating habits (2).

The period of pregnancy is one period of the life cycle that is prone to nutritional problems. Optimum nutrition for pregnant women is necessary for the healthy growth of the fetus including the growth of the brain. Pregnant women experiencing malnutrition, especially chronically lack of energy, are at risk of giving birth to babies with low weight and impact on the growth and development of children, intellectual development, and productivity in the future. For pregnant women to have good nutritional status during pregnancy, then a mother

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should apply a balanced diet of nutrition [3].

Maternal nutrition fulfillment is influenced by many aspects, especially knowledge of pregnant woman nutrition, education level, and support of husband, family, and the community [4]. In applying a balanced nutrition diet, an expectant mother needs to have sufficient nutritional knowledge to be able to use balanced nutrition in the daily menu. Previous research in other regions of Indonesia proved a relationship between the knowledge of pregnant women about the nutritional needs of pregnancy with nutritional status of pregnant women [5]. Similar research also confirms that there is a real relationship between nutritional knowledge and nutrition practices in pregnant women [6]. Furthermore, only about 2.5% of pregnant women who have good knowledge and the rest the knowledge of pregnant women on nutrition is still less, especially about causes of anemia, anemia symptoms, impact iron deficiency, factors that help and inhibit the absorption of iron and healthy weight gain during pregnancy [6].

This study aims to understand the knowledge and perception of pregnant women related to nutrition and health, especially about pregnant women's food (types and quantities), consumption of liver, eggs, fish, use of iron tablets, pregnant women diet pattern, hand washing habit and the role of husband in supporting nutritious food diet intake and improving nutritional status of pregnant women in rural areas of Central Kalimantan, Indonesia.

METHODOLOGY

This research used qualitative research methods, implemented in Sei Hanyo Village, Supang Village, and Bulau Ngandung Village, Kapuas Hulu sub-district, Central Kalimantan. Data was obtained by observation technique and an in-depth interview with 34 participants, consisting of pregnant mothers (9 people), grandmothers (12 people) and husbands (12 people). The implementation of the study was conducted in September through October 2017.

RESULTS

Maternal knowledge about nutrition is very influential in the selection of nutritious food and the ability to prepare a balanced menu following the needs and tastes. In this research knowledge and perception of pregnant woman's food including the type of food consumed and the amount of food consumed. Most pregnant mothers at the beginning of pregnancy (<1 month) experience cravings, and all expectant mothers as much as possible to fulfill craving desire because they do not want something wrong happens to the fetus. In the 1st month, they mostly only consume (there are also until 4-5 months) just started to consume rice, vegetables, and side dishes. What happened reflected in the results of interviews with the following informants: "*Everything the pregnant women want must be fulfilled in order the baby will be healthy and nothing less*." Most of the menu of pregnant women consists of carbohydrates, sources of animal meats, and vegetable. The food sources rarely consumed are the dish from vegetable and fruit. Most pregnant women make use of local food that easily found in their area.

Most participants said that the quantity of food consumed during pregnancy less than when they were not pregnant. Their appetites were going down during the early period of pregnancy. Besides, some other pregnant women consume less food because they were afraid that their fetus would be more significant and challenging to give birth. Only 1 person answered more food during pregnancy (about 3 cups of rice), and one person said she had the equal portion before and during pregnancy.

This is reflected in the results of interviews with the informants as follows:

Eat less during pregnancy, disorder and eat depending on taste.

Eat more time before pregnancy because when being pregnant the appetite was decreased.

Eat more when they were not pregnant because if they eat more on pregnancy period would make them difficult to breathe.

According to pregnant women in the research, good food is in the form of vegetables, fish, milk for mother and fetus healthy. There is also an opinion the best food for pregnant women is the source of plants grown not with pesticides / harmful fertilizers such as cucumber, spinach, bamboo shoots, young local ferns, and young rattan. Most participants believe that milk for pregnant women has the significant role in improving maternal and fetal health.

Based on interviews with pregnant women obtained the results that the portion of food in the period of

pregnancy and not pregnant is just the same as they proved from her previous pregnancy that they did not experience any severe problems. (2 participants). There is also another idea that the amount of food consumed by a pregnant mother less than usual is related to carvings, nausea, and vomiting experienced by pregnant women (3 participants). Further, participants said liver, fish, and eggs are perfect for the health of pregnant women. The most commonly consumed food ingredients are eggs, especially liver of chicken while liver of pork is rare because the price is quite high. The cost of chicken and fish is also high especially for freshwater fish.

Based on interviews with pregnant women, those with low socio-economic conditions do not know about iron tablets (Fe) and do not consume Fe tablets. Besides, based on interviews, most pregnant women apply food taboo such as not to drink banana heart because it can cause thick /hard membrane, pineapple can cause weak content/miscarriage, deer can cause death in children,cork-like fish can cause death in children, taro shoot cause the fetus challenging to get out and local fish named *lawang* and *telan* cause fetus hard to get out. Furthermore, the women also avoid eating *suna* - a traditional type of onion that is usually used as a spice of cooking and also to make chili sauce as it is believed it can cause the baby too big in the womb and cause bleeding. Also, yellow pumpkin, cucumber, and zucchini shoots are thought to cause the placenta to survive, and sticky and attached bananas can produce twin-born babies like the attached bananas. The tradition of dietary restrictions is strong enough in the villages of Bulau Ngandung, Supang and Sei Hanyo. But not all pregnant women follow the ban. Of the nine participants, four pregnant women did not observe the taboo, and the five participants still followed the abstinence imposed by their family. Of the five participants who went through abstinence, most of the participants had an inferior education.

Based on the interview it was found that all pregnant women do hand washing but not all using soap. Washing hands with soap are only done if the hands really look dirty and smelly. Hand washing mostly not in running water. The most frequent hand washing time is before eating. All participants have not been socialized with hand washing steps.

DISCUSSIONS

Because of carving, women in this research consumed whatever they wish to destroy. Cravings are the effect of hormonal changes in pregnant women that lead to increased sensitivity to the smell and taste of food. Desires are universal during early pregnancy and are not related to particular physiological needs [8]. However, the pregnant women in respective rural areas have consumed the standard food containing carbohydrate, protein, and vegetables available in the neighborhoods for the fetus to be healthy. Commonly consumed food ingredients are as follows: carbohydrate source: rice, cassava, bread yams. For protein sources are: shrimp, a type of catfish, fish, dried fish, pork, liver (of chicken, pork), chicken (domestic and poultry) and for vegetable sources are: spinach, kale, carrots, cucumber, cabbage).

Most pregnant women have the wrong perception of the nutritional needs of pregnant women as most respondents reduced the quantity of food consumed during pregnancy. This will reduce the supply of energy as two aspects influence the energy needs: the increase in basal metabolic rate to support the growing needs of the fetus and the accompanying network, as well as physical activity [9]. This means that the energy and nutrient needs of mothers during pregnancy should be higher than when they were not pregnant which applied by the women in the research. This is by Regulation of Minister of Health Republic of Indonesia No. 75 the Year 2013 about nutrition adequacy rate Indonesia that stipulates that the additional energy needs of pregnant women in the first trimester of 180 kcal above the needs before pregnancy and the addition of 300 kcal in trimesters II and III. Furthermore, according to Regulation of Minister of Health No. 41 the Year 2014 about balanced nutrition guidelines writes that during pregnancy a mother should increase the amount and type of food eaten to meet the needs of infant growth and the needs of infant and mother to produce breast milk.

All pregnant women have not been exposed to the balanced nutrition messages and have not been exposed to information that milk is not a perfect food, but the nutrient of milk is equivalent to the nutrients found in animal side dishes. This is per the written in Minister of Health Regulation no. 41 The year 2014 that states one portion of milk is equivalent to one part of animal side dishes. For example, one serving of fresh fish in one medium slice (40 grams) equal to one cow milk (200 ccs). Participants who answered that the number of pregnant women eating less during pregnancy is mostly low-educated, who responded to the needs of both pregnant

and non-pregnant, most of them were middle-educated, while those who answered the number of pregnant food more than before pregnant were mostly highly educated. It indicates that one's education level influence the level of knowledge and that pregnant women with low education tend to be reluctant and embarrassed to visit health facilities so rarely exposed to health information, especially information about nutrition. This is in line with the theory that the level of education determines the level of knowledge of a person, the higher the level of a person's formal education the level of expertise will be higher [10].

The knowledge of the women in the rural areas of Central Kalimantan on Fe tablets is minimal. This situation occurs because the pregnant women never come to community health facilities. Furthermore, for other pregnant women have seen and know the tablet Fe but do not know the benefits and rules of taking the tablet. Because of this lack of knowledge, pregnant women do not consume Fe tablets every day as recommended leading to a deficiency in iron intake. The additional iron intake in pregnant women is needed to increase iron deposits of the mother [11]. Of the iron deposits of the mother, the fetus also deposits iron that will be used to meet the needs of the baby born until the age of 46 months, especially if the milk is less iron. Besides, iron plays a role to meet the needs of the placenta and fetus and for the preparation of the mother to give birth is to replace the blood that is much missing due to the process of increased blood volume of the mother [12].

Most pregnant women avoided a sure to cultural belief. This is natural as, in Central Kalimantan mostly reside, the cultural beliefs leading too taboo is firmly believed and maintained as local wisdom [13]. Pregnant women argue if abstinence is broken it will affect the fetus could be sick even died, difficult to give birth and also can change other family members. The average food that is challenged is a kind of food that cannot be consumed by a family for generations so that the food that is challenged between pregnant women varied with one another. The reason for abstinence is because they believe that whoever broke this prohibition will have difficulties during childbirth as well as abnormalities in infants. The figures generating tradition of the ban are their parents who received it from their grandparents. Abstinence is always reminded when daily chats even begin to be implanted since they are children to challenge some of these foods. Reactions that occur in society if there is a breaking taboo then the pregnant woman will be the topic of discussion and judged negatively by the public.

In general, husbands pay less attention to their wife's intake during pregnancy. Participants are more concentrated as a breadwinner, while the management of food is left to the wife in full.

CONCLUSION

Knowledge and perception of pregnant mother related to nutrition and health especially about pregnant woman's food, consumption of liver, egg, and fish, use of the iron tablet, hand washing habit with soap in running water and husband role in supporting nutritious intake and improving the nutritional status of pregnant women are still relatively low. Most pregnant women still apply local taboos, the food abstinence during pregnancy. There are a needs of education about nutrition for pregnant mother continuously and evenly in all society and support from husbands and community so that pregnant mother can apply balanced diet in order the fetus born will be healthy and intelligent.

Ethical Clearance: The Ministry of Health Polytechnic approved this research in Central Kalimantan, Indonesia. Ethical clearance was obtained from the Faculty of Medicine Palangkaraya University, Indonesia. A research permit was requested from the local health authorities. We also wish to thank all the participants who contributed to this study.

Conflict of Interest: Nil.

Source of Funding: The Ministry of Health Polytechnic Palangkaraya, Indonesia.

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DOI Numher: 10.5958/0976-5506.2018.01355.4

A Hospital based Study of Clinico-Socioeconomic Profile of Musculoskeletal Tuberculosis

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ABSTRACT

Musculoskeletal Skeletal tuberculosis accounts for 30% of the tuberculosis occurring at extra pulmonary sites. The majority of the inflicted are in the economically productive age group and from low social strata. Aims of this study are to study the proportion of musculoskeletal tuberculosis and its determinants in KMC and associated hospitals in Mangalore and to study influence of socio-economic status on its prevalence. This is a cross sectional analysis of patients admitted or attending OPD who were diagnosed with musculoskeletal tuberculosis to KMC and associated hospitals. Socio-economic status were assessed according to modified Kuppuswamy method of social classification- 2012. Spine was the commonest site of musculoskeletal tuberculosis in this study. Highest incidence was found in socio-economic class 5 (50%). This study highlights correlation between lower socio-economic strata and higher incidence of tuberculosis and discusses the reasons for it.

Keywords: *Tuberculosis, Socio-economic profile.*

INTRODUCTION

Tuberculosis is probably as old as mankind. It's continued presence amidst us is a sorry tale of missed opportunities by medical profession . Tuberculosis is one of major health problems in developing countries of the world today. It has made its impact felt throughout the ages [1].

Musculoskeletal Skeletal tuberculosis accounts for 30% of the tuberculosis occurring at extra pulmonary [2]. The rate of extrapulmonary TB (EPTB) worldwide has reached 20%–40% (20% in children), as reported in recent [3,4&5]. Young patients, females, and people of African or Asian origin seem to have a higher risk of developing [6,7]. Of cases with EPTB, 10%–25% have musculoskeletal TB[2,8], leading to an estimated global prevalence of 19–38 million [9]. The most commonly affected site of infection is the spine (50%–69%), followed by the hip, knee, and ankle/foot (10%–13% each) [7]. Worldwide, 9 million new tuberculosis (TB) cases are annually reported; of these, approximately 1 million (13%) occur in human immunodeficiency virus (HIV)–positive [10].

The majority of the inflicted are in the economically productive age group and from low social strata. Hence this disease is rightfully called barometer of social welfare.

Aims of this study are to study the proportion of musculoskeletal tuberculosis and its determinants in KMC and associated hospitals in Mangalore and to study influence of socio-economic status on its prevalence.

MATERIAL AND METHOD

This is a cross sectional analysis of patients admitted or attending OPD who were diagnosed with musculoskeletal tuberculosis to KMC and associated hospitals in Mangalore over a period of one year from September 2013 to August 2014. Institutional Ethical committee clearance was taken. Hundred consecutive patients with diagnosed musculoskeletal tuberculosis

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were included in this study.

Diagnosis was based on microbiological or histopathological confirmation. Microbiological investigations included ZN staining for AFB, GeneXpert testing for TB and rifampicin resistance. Histopathological diagnosis was based on identifying tubercular granulomas in biopsy specimens.

Other investigations like ESR,total and differential count, chest radiograph were also done and recorded. All patients with diagnosed musculoskeletal tuberculosis were offered HIV testing and data recorded.

Clinical and social economical variables were recorded by three authors in the form of detailed questionnaire. The questionnaire contained questions on social variables (occupation, education, monthly family income) and clinical profile (deformity, signs and symptoms, neurological involvement, site affected, structures affected etc.).

Socio-economic status were assessed according to modified Kuppuswamy method of social classification-2012[11] . Based on this patients were classified into five strata. Class 5 represented lowest socio-economic strata and class 1 represented highest socio-economic strata.

This study does not cover treatment and outcome in these patients.

RESULTS

Spine was the commonest site of musculoskeletal tuberculosis in this study (70%), followed by hip (12%), knee (6%), ankle (5%) (**Table 1).** No cases were found involving elbow joint. Highest incidence was found in 21-30 age group (22%), followed by 51-60 age group (20%). Least incidence was found in 0-10 years age group (**Table 2)**. Male to female ratio in this group was 7:3.

Table 1: Distribution of musculoskeletal tuberculosis

Joint	Percentage of Incidence
Spine	70%
Hip	12%
Knee	6%
Ankle	5%
Shoulder	4%
Elbow	0%
Wrist	3%

Table 2: Age distribution of musculoskeletal tuberculosis.

Age group in years	Percentage of incidence
0-10	3%
11-20	8%
21-30	22%
31-40	18%
41-50	12%
51-60	20%
61-70	10%
71-80	7%
81-90	0%
91-100	0%

In spinal tuberculosis cases, dorsal Spine was most commonly affected(43%), followed by dorsolumbar junction (26%). Least affected was lumbosacral junction (3%).

HIV coinfection was seen in 12 cases. Eight of them had spinal tuberculosis and four of them had extra-spinal tuberculosis. Multi-drug resistant (MDR) tuberculosis was found in 4 cases.

Highest incidence was found in socio-economic class 5 (50%), followed by class 4 (28%). Least incidence was found in socio-economic class 1 (5%) **(Table 3).**

Table 3: Incidence of musculoskeletal tuberculosis in various socio-economic groups.

Socio-economic groups According to modified Kuppuswamy method	Incidence of musculoskeletal tuberculosis
Class 1	5%
Class 2	6%
Class 3	11%
Class 4	28%
Class 5	50%

DISCUSSION & CONCLUSION

Spine is the commonest site of musculoskeletal tuberculosis. This has been well documented in literature like Agarwal RP et al[12],Schwartz Y et al[13], Netval et al[14]. In this study 70% of cases were involving spine.

This could be explained by the fact that our hospital is a tertiary referral centre where spinal surgery services are available. In referring hospitals, musculoskeletal tuberculosis other than spine are generally well managed because of non requirement of specialised surgical services

In this study there is bimodal peak in age group incidence. This is similar to many studies reported like Colmenero J D et al[15]. Higher incidence in 20-30 age group can be explained by higher chances of exposure because of migration, occupation and also higher incidence of coinfection with HIV. Higher incidence in 50-60 age group can be explained by comorbidities like diabetes and pulmonary diseases.

Higher incidence of spinal tuberculosis in dorsal and dorso-lumbar region in this study is similar to the incidence in literature. Reasons attributed to this are: increased stress in dorsolumbar junction, proximity of cysterna chyli, drainage of Batson's venous plexus etc[16].

Tuberculosis is the most common opportunistic infections in HIV positive patients[17]. High incidence of coinfection shows higher prevalence of both diseases.

Highest incidence of musculoskeletal tuberculosis is found in the lowest socio-economic group. These results are similar to other studies done in India. Probable reasons for this are: illiteracy, poverty and ignorance about disease prevention. These findings are similar to findings other studies done in India like Agarwal et al[12] and AAK Rao et al[18].

To conclude, this study highlights the correlation between incidence of musculoskeletal tuberculosis and lower socio-economic status and therefore the need for socio-economic upliftment for eradication of tuberculosis.

Acknowledgments: Nil

Conflict of Interest: Nil

Source of Funding: Self

Ethical Clearance: Institutional Ethical committee clearance taken.

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DOI Numher: 10.5958/0976-5506.2018.01356.6

Knowledge, Attitude, and Practices about Obesity among Obese Homemakers in Urban Udupi: A Cross-Sectional Study

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ABSTRACT

Background: National Family Health Survey (NFHS) reported that percentage of women who were obese at age group 15 – 49 years increased from 11% to 15% from NFHS – 2 to NFHS – 3. In rural parts, under nutrition is more predominant, but in urban areas, obesity and overweight are more than three times higher, which may be owing to less physical activity levels in urban. The prevalence of obesity is greater for urban women and it is largely preventable through changes in lifestyle. It is important to assess the individual's knowledge about the link between food, physical work, and obesity in planning any intervention strategies. So it is necessary to explore the knowledge, attitude, and practices on obesity before planning any intervention programs. **Objective:** To assess Knowledge, Attitude, and Practices (KAP) on obesity among obese homemakers in urban Udupi **Method:** A cross-sectional study was carried out among obese homemakers residing in urban Udupi. A total of 180 obese homemakers were recruited from 30 wards in urban Udupi community based on BMI criteria within the age group of 30 to 45 years. An investigator developed KAP questionnaire on obesity was administered to the participants. **Results:** The mean age of study population was 36.77 years. In knowledge section, 45% respondents had a low level of knowledge regarding obesity. 51.7% had a negative attitude towards obesity and 76% had a poor practice related to obesity. **Conclusion:** Women who are obese and homemakers by occupation residing in the urban community had a limited knowledge, negative attitude and worst in practices related to obesity.

Keywords: *Obesity, Knowledge, Attitude, Practices, Homemakers*

INTRODUCTION

National Family Health Survey (NFHS) reported that percentage of women who were obese at age group 15 – 49 years increased from 11% to 15% from NFHS – 2 to NFHS – 3[1]. In rural parts, under nutrition is more predominant, but in urban areas, obesity and overweight are more than three times higher, which may be owing to less physical activity levels in urban. The prevalence of obesity is greater for urban women. NFHS reported that only 9.4% women were obese in NFHS-2 whereas it was increased to 24% in NFHS -3.[2] Obesity is largely preventable through changes in lifestyle. Motivation is an important factor in obesity prevention. The perception that one's body weight is higher than normal for a healthy life is necessary as a prerequisite of an individual's motivation to lose weight. It is critical to know about the awareness of causes, significance, and steps to be taken to prevent obesity. Hence it is highly important to assess the individual's knowledge as well as their attitude and practices related to obesity. So it is necessary to explore the knowledge, attitude, and practices before planning any intervention programs.

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OBJECTIVE

To assess Knowledge, Attitude, and Practice (KAP)

on obesity among obese homemakers in urban Udupi

METHOD

Study design, setting, and population:

This cross-sectional study was carried out during August 2017 in Udupi district, southern Karnataka after obtaining ethical clearance from Institute Research Committee (IEC 222/2016) Manipal. In this study, the unit of allocation is based on "wards". The entire urban Udupi area consists of 35 wards. In that, 30 wards were selected. From each ward, 06 subjects were selected based on selection criteria. A total of 180 obese homemakers were recruited from 30 wards in urban Udupi community based on BMI criteria for Asians as per WHO (25 – 34.9) within the age group of 30 to 45 years.[3, 4] In the community, Homemakers as per the selection criteria were identified through Door-to-Door survey method.

Data Collection:

For the study purpose, Investigator developed a knowledge, attitude and practice questionnaire (KAP) on obesity, specific to the Indian context. The questions were generated based on a semi-structured interview with obese homemakers, literature reviews and clinical experiences of the investigator. The content validity of the developed questionnaire was carried out involving experts in the field of obesity and related healthcare professionals. The tool consists of total 29 questions with 15 questions under knowledge, 06 for attitude and 08 in practice. It has questions related to obesity, diet and physical activities. The demographic profile of the participants was gathered after developing a good rapport with them. The developed KAP questionnaire on obesity was administered through a face-to-face interview by the investigator individually. The time duration to complete the questionnaire was 15 to 20 minutes. The responses for knowledge and attitude questions were "Agree", "Disagree" and "Uncertain" and the options for practices were "Always", "Sometimes" and "Never". For Knowledge and Attitude components a score of 1 was assigned for a correct answer and 0 for a wrong response. "Uncertain" response was also considered as an incorrect response. For Practice component, "Always" response was assigned with score of 2, "sometimes' as 1 and "Never" response as 0. Out of 29 questions, 06 questions were reverse statements to avoid bias and their scores were reversed while calculating the total score. The scores were summed up to obtain an overall score separately for knowledge, attitude, and practices for each respondent. Level of knowledge was categorized into "high" for respondents who scored 50% and above and "low" for those who scored less than 50%. Similarly, level of attitude was categorized into "positive" for respondents who scored 50% and above and "negative" for respondents who scored less than 50%. Practices were categorized into "good" for respondents who scored 50% and above and "poor" for respondents who scored less than 50%. Gathered data was entered and analyzed in SPSS version 15.

RESULTS

General characteristics of participants:

A total of 180 obese homemakers were recruited for the study. The mean age of study population was 36.77 years with a standard deviation (SD) of ±5.089 (range 30–45 years). 78.9% (142) participants were in obese grade I and 21.1% (38) were in obese grade II as per WHO classification for Asians. Among them, 65% (117) belonged to the nuclear family. In educational status, only 12.3% (22) were graduates. 21.1% of participants belonged to an upper class, 59.4% were upper middle, 13.9% lower middle and 5.6% of participants belonged to upper lower class. About 83.9% (151) were non-vegetarians.

KAP on obesity:

Knowledge regarding obesity:

The total questions under knowledge section were 15 with score varied with a minimum score of 0 and a maximum score of 15 (Table 1). Overall, 45% respondents had a low level of knowledge and the rest 55% of respondents had high knowledge about obesity.

Attitude regarding obesity:

The total questions under attitude category were 06 questions (Table 2) with a minimum score of 0 and a maximum score of 6. Overall, 51.7% had a negative attitude about obesity.

Practices regarding obesity:

The total questions under practice section were 08 (Table 3) with a minimum score of 0 and a maximum score of 16. Overall, 76% had a poor practice related to obesity.

Table 1: Knowledge about Obesity

No.	Knowledge questions	Agree	Disagree	Uncertain
01	Obesity is a disease	79 (43.9)	62 (34.4)	39 (21.7)
02	Diet rich in fatty items can cause Obesity	106 (58.9)	42 (23.3)	32 (17.8)
03	Being obese can lead to Diabetes & Hypertension	84 (46.7)	65 (36.1)	31 (17.2)
04	Maintaining an ideal body weight is not important for maintaining good health	51 (28.3)	115 (63.9)	14 (7.8)
05	Knowing the 'Body Mass Index' value is necessary	100 (55.6)	54 (30.0)	26 (14.4)
06	It is necessary to know the normal calorie value required per day for an individual	99 (55.0)	53 (29.4)	28 (15.6)
07	Being physically active is important for good health.	132 (73.3)	23 (12.8)	24 (13.3)
08	Being physically active helps to maintain an ideal weight	113 (62.8)	47 (26.1)	20 (11.1)
09	It is important to know the normal levels of physical activity required for an individual	98 (54.4)	63 (35.0)	18 (10.0)
10	Doing all your home activities (cleaning, washing, walking to shop) manually will help you to maintain an ideal weight	78 (43.3)	85 (47.2)	17 (9.4)
11	Being physically inactive can lead to health problems	113 (62.8)	40 (22.2)	27 (15.0)
12	Doing physical activity (walking, cycling) will give you mental relaxation	66 (36.7)	55 (30.6)	59 (32.8)
13	Involving yourself in leisure time activity (outdoor games) will help to maintain ideal weight	84 (46.7)	64 (35.6)	31 (17.2)
14	Doing your daily activities by yourself (cleaning, dusting, washing), gives you similar benefits as exercise (cycling, swimming, jogging)	77 (42.8)	79 (43.9)	22 (12.2)
15	Women are often more overweight/obese than men	97 (53.9)	64 (35.6)	19 (10.6)

Table 2: Attitude towards Obesity

No.	Attitude questions	Agree	Disagree	Uncertain
01	Regular checking of your weight is important	114 (63.3)	40 (22.2)	26 (14.4)
02	Is it necessary to keep in touch regularly with physicians for concerns regarding obesity	94 (52.2)	61 33.9)	25 (13.9)
03	Diet management can prevent obesity	116 (64.4)	44 (24.4)	20 (11.1)
04	Do you feel stigmatized for being obese?	96 (53.3)	79 (43.9)	5 (2.8)
05	Do you feel shy to do physical activity/exercises?	100 (55.6)	78 (43.3)	2 (1.1)
06	Do you feel adherence to a physically active lifestyle/exercise is difficult?	56 (31.1)	108 (60.0)	16 (8.9)

Table 3: Practice related to Obesity

No	**Practice questions**	**Always**	**Sometimes**	**Never**
01	Do you have a habit of checking your weight regularly? (monthly or 3- 6 months once)	6 (3.3)	24 (13.3)	150 (83.3)
02	Do you drink soft drinks with sugar added with them?	22 (12.2)	123 (68.3)	35 (19.4)
03	Do you eat fast foods? (fried /junk food, burger & chat items)	34 (18.9)	116 (64.4)	29 (16.1)
04	Do you calculate your calorie intake?	6 (3.3)	7 (3.9)	167 (92.8)
05	Are you involving yourself in physical activity?	20 (11.1)	75 (41.7)	84 (46.7)
06	Do you maintain the required levels of physical activity?	17 (9.4)	63 (35)	100 (55.6)
07	Do you measure your BMI/waist circumference regularly?	0 (0)	4 (2.2)	176 (97.8)
08	Do you follow weight reduction strategies as advised by physician/ any others?	0 (0)	36 (20)	144 (80)

DISCUSSION

Knowledge, attitude, and practices (KAP) studies were used to understand the extent of awareness and their readiness to adapt to risk-free behaviors. Obesity is one of the important health challenge leading to many health hazards and enormous financial burden. In our study, only 55% had high knowledge, almost half of the participants had a low level of knowledge. The current findings may be due to their low educational status and they were homemakers by occupation which would have limited their knowledge about obesity. Similarly, almost half of the participants had a negative attitude towards obesity. Attitude refers to the traditional beliefs and ideas of the individuals or community which is important for appropriate practices. It is necessary to address issues related to attitude as positive attitude leads to appropriate practices. In our study, about two-thirds of respondents were poor in practices related to obesity. This may be due to poor knowledge and negative attitudes towards obesity. A study related to KAP carried out in south India about complications and causes of obesity among women, found that 43% of women failed to recognize that obesity can lead to diabetes and 37% failed to do so regarding heart attack. This lack of awareness in both rural as well as urban groups indicates a need for an educational intervention to create awareness.[5] Hence, it is necessary to explore the knowledge, attitude, and practices before planning any intervention programs.

CONCLUSION

Overall women who are obese and homemakers by occupation residing in the urban community had a limited knowledge, negative attitude and worst in practices related to obesity. As obesity is associated with many health hazards, it is important to initiate a community level health intervention programs suitable specifically to the target population in the community, based on their current levels of knowledge, attitude, and practices.

Conflict of Interest: Nil

Source of Funding: Self

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DOI Numher: 10.5958/0976-5506.2018.01357.8

Behavioural Analysis of Consumers Towards Fairness Cream Brands and their Preferences; with Reference to Hul, Madanapalle, Chittoor District

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ABSTRACT

There is substantial evidence that human behavior is to a large extent driven by motives/rewards and goals. In global era the men and women become beauty conscious and beauty become essential in our day to day life. All the marketers understood the attitudinal changes, lifestyles and changing environmental conditions taken into consideration to identify the solution for their problem to enhance the glamour. Today in India, numerous companies produced Cosmetics & Creams which suits to the personality of the consumer. Indians are witnessing a paradigm shift from traditional methods of using home products to modern methods of using branded cosmetics and fairness cream to become fair. Initially they realized about the men's market and there plenty of fairness creams introduced in market This made fair changes in market and market stakes of the brands. Today this companies are working on the preferences of the customers and their likes to succeed in the market by the way of differentiation strategies. Availability of massive number of cosmetic brands creates the competition given a scope to the researcher to study the buying behvaiour of consumers of fairness creams in Madanapalle Chittoor District.

Keywords: *fair, massive, preference, personality*

INTRODUCTION

"Black skin white Masks" book author Fanon says "As much as the white man thinks himself superior to the black, the black man desires to be white. Indeed, black men want to prove to white men, at all costs, the richness of their thought, the equal value of their intellect". "For the black man, there is only one destiny. And it is white"

Business environment today is turbulent as never before and the service industry as promising as never before. In this era of intense competition where consumer became prosumer. In the dynamic environmental conditions, it is the need for a marketer to act proactively and reactive sti to understand the insights of consumer. As there is constant change in the living standards, trend, fashion and change in technology, consumer's attitude towards the purchase of product varies. Understanding these factors is of utmost importance because the marketing of product is largely dependent on these factors. Thus, consumer behaviour serves as a successful tool for marketers in meeting their sales objectives

Behavior is generally motivated by a desire to attain our goal. In order to study the consumer behavior we should study their insights i.e. perceptual (how (s)he and to selects, understands and interpret the stimuli) cognitive (how he thinks and analyses about the stimuli) and motivational mechanisms (how he or she get inspire to respond to the stimuli).

The study of consumer behavior examines their emotions, attitudes and preferences affect buying behavior. It means that the characteristics of the consumer how (s) he reflects towards the predisposed object. The study of consumer behavior is concerned with how a consumer behaves when he consumes time, energy and money and get involved to buy the product and

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the aspects of purchasing behavior - from pre-purchase activities through to post-purchase consumption and evaluation activities. Understanding purchasing and consumption behavior is a key challenge for marketers. In order to understand them the marketer should strive allot to get in touch with them to find their insights and behave because due to the availability of massive number of brands, there is no loyalty, increased brand switching tendency, changing life styles i.e newness in product. By these factors competency became tuff to the marketer and does not have guesstimate for their survivance. That's why this behavior analysis of a consumer gained the immense popularity and it became an ever ending subject.

REVIEW OF LITERATURE

According to Bhattacharya[1] stated in her article "Indian Quarterly-Indian Beauty Market Roundup" that, India is one among the fastest 21 growing beauty markets in the world and that the colour cosmetics market segment is growing faster as more and more women become aware of beauty products and tend to use make-up products.

Vandana Sabharwal et al[2]., identified in their study, 'Women Buying Behaviour and Consumption Pattern of Facial Skin Care Products' that moisturizers were found to be preferred by most of the consumers followed by anti-ageing cream and toners preferred by aged women.

Michelle Guthrie et al[3]., in their study entitled, "The Effects of Facial Image and Cosmetic Usage on Perceptions of Brand Personality" stated that in the total quantity of cosmetic consumption, the consumer's facial image may have an influence. Women tend to use more cosmetics when they have self-satisfaction of their facial image. The investigators opined that the consumers who were with a positive facial image had more confidence in using cosmetics to enhance their beauty. They creatively manipulated their facial features which resulted in higher level of cosmetic use

Thomas F. Cash et al[4]., conducted a controlled experiment and published the article, "Effect of Cosmetics Use on the Physical Attractiveness and Body Image of American College Women". The result of the study revealed the following facts: male consumers felt that women who were physically attractive were wearing cosmetics; women without cosmetics were not beautiful to the eyes of others.

Neeraj Kaushik et al[5], conducted an analysis entitled, "A Study on consumers Buying Pattern of Cosmetic Products in South Haryana". The study pointed out that quality and price were found to be the important criteria for buying cosmetics. Lower income group people gave more importance to price, while those of higher income group gave more importance to quality and brand name.

Kulkarni et al.[6], concluded in their study, 'A Factor Analysis on Product Attributes for Consumer Buying Behaviour of Male Cosmetics in Nagpur City' that the brand, quality, advertising, store location were the important factor for men while buying personal care products.

A research titled "Study of consumption pattern of cosmetic products among young males in Delhi" by Abdullah Bin Junaid and Dr. Reshma Nasreen[7] inspected that purpose of using a skin care product is not affected by age group, the place of buying skin care product has no significance with the income of a person and cosmetic consumer's income doesn't play any role while choosing a brand.

According to Eeve Mari Karine[8] in her article, "The Cosmetics Market Facing a Chan" stated that, the cosmetics market in Finland has undergone a dramatic change. The people in Finland choose their cosmetics very carefully. Cheap cosmetic brands were now preferred by them.

STATEMENT OF THE PROBLEM

Order of preferences of fairness brands and attribute preferences may vary with the region to region with respect to the behavior of the consumer**.** That's why different brands can have the noticeable market share. The researcher wants to know the behavior of consumer of Madanapalle region of Chittoor district with respect to the attributes of different fairness cream brands and to examine which attribute could be more preferred by the residents of Madanapalle and is having the more weightage in Madanapalle region. Hence the researcher made his effort towards the behavioral analysis of consumers towards fairness cream brands.

NEED FOR THE STUDY

Due the changes in polluted environmental condition continuous depleting ozone layer has put us at a higher risk of get affected from the harmful rays of

the sun. Because of damages in ozone layer, the UV rays are directly attacking on skin. Acute as well as chronic sun exposure can induce clinical and biological damage to the skin such as photo ageing, pigmentation, sunburn etc. The essential skin proteins, such as collagen, keratin, and elastin are required to protect our skin from UV ray exposure and keeping the skin smooth and healthy. That's why the researcher made a modest effort to find all the brands are alike or different in the context of its attributes and outcome. Finally, he wants to prove the appropriate definition for "BRAND" (i.e. PROMISE) and its impact on consumer behavior.

OBJECTIVES OF THE STUDY

To examine the difference in the attributes of different fairness cream brands

To analyze the impact of attributes on consumer buying behaviour

DATA COLLECTION:

Primary data:

Collected the data from 150 customers with the help of well-structured questionnaire regarding their behavior towards different fairness cream brands and analyzed the impact of its attributes on their behavior.

Secondary data

Collected the information from websites, reputed national and international journals to obtain the data in order to understand the buying behaviour

Sample Size: 150

Sample Method: Random sampling

Statistical Technique used: Analysis of data by using SPSS software. The Regression analysis and ANOVA tests used to analyze the data.

LIMITATIONS OF THE STUDY

The study area covers only in Madanapalle only

The accuracy of findings of study depends upon the correctness of the responses provided by the respondents.

PERSONAL CARE SECTOR IN INDIA: AN OVER VIEW

According to the Business Standard, July 2008, 2016 reveals that Personal care market to touch US$ 20 billion in India by 2025. The consumption pattern of cosmetics among teenagers went up substantially between 2005 and 2015 because of increasing awareness and desire to look good. In fact, this product category is among the fastest growing segments for the manufacturers of a range of products including body sprays. Over 68 percent of young adults feel that using grooming products boost their confidence.

The market size of India's beauty, cosmetic and grooming market will reach $ 20 billion by 2025 from the current $ 6.5 billion on the back of rise in disposable income of middle class and growing

SEGMENTED FAIRNESS CREAM BRANDS ON THE BASIS OF CATEGORY

Low end	Middle end	High end
Fair and Lovely Goodrej fair "Glow" and fair"ever" Freschia Vocco Turmeric	Biotique coconut Milk Oriflame Love A "Fair" Oriflame natural Northern Light Avon VIP Fairness Cream Lotus fairness Gel Samara Fairness Cream	L'Oreal Plenitude White Perfect range Lancome's Blanc Cristal range YSL's Blanc Absolu Serum Clinique's Active White Line Elizabeth Arden's Visible Whitening Pure Intensive capsules Estee Lauder's White Light.

ANALYSIS AND DATA INTERPRETATION

Six brands like Fair and lovely, patanjali, L'oreal, Himalaya,Garnier, Maybeline and five attributes have taken like price, quality, brnad image, quantity and fairness for the study of consume buyer behaviour

Table:1 ANOVA

		Sum of Squares	Df	Mean Square	F	Sig.
PRICE	Between Groups	6.812	5	1.362	4.776	.000
	Within Groups	41.081	144	.285		
	Total	47.893	149			
Quality	Between Groups	43.891	5	8.778	12.444	.000
	Within Groups	101.582	144	.705		
	Total	145.473	149			
Brandimage	Between Groups	44.581	5	8.916	14.708	.000
	Within Groups	87.293	144	.606		
	Total	131.873	149			
Quantity	Between Groups	13.263	5	2.653	3.286	.008
	Within Groups	116.230	144	.807		
	Total	**129.493**	**149**			

ANOVA Interpretation:

From the ANOVA table it can be stipulated that there is a significant difference in attributes such as Price, Quality, Brand Image, and Quantity for different brands of fairness cream with (p value= <0.05).

Table:2 SUBSETS OF ANOVA ON PRICE

Brand of cream	**N**	**Subset for alpha = 0.05**	
		1	**2**
Maybelline	15	3.73	
Patanjali	25	3.76	
Garnier	30	3.87	
L'Oreal	26	3.92	
Himalya	26	4.08	4.08
Fair and Lovely	28		4.36

Interpretation

From the above table it can be stipulated that the fair and lovely brand has the highest preference and the Maybelline brand has the lowest preference in terms of price attribute.

Table:3 SUBSETS OF ANOVA ON QUALITY

Brand of cream	N	Subset for alpha = 0.05			
		1	2	3	4
Maybelline	15	3.13			
Fair and Lovely	26	3.38	3.38		
Patanjali	25	3.44	3.44		
Garnier	30		3.83	3.83	
Himalya	26			4.12	
L'Oréal	28				4.79

Interpretation

From the above table it can be stipulated that the L'Oréal brand has the highest preference and the Maybelline brand has the lowest preference in terms of Quality aspect.

Table:4 SUBSETS OF ANOVA ON BRAND IMAGE

Brand of cream	N	Subset for alpha = 0.05		
		1	2	3
Patanjali	25	2.84		
Garnier	30		3.40	
Fair and Lovely	26		3.69	
Maybelline	15		3.93	3.93
Himalya	28			4.32
L'Oréal	26			4.38

Interpretation

From the above table it can be stipulated that the L'Oréal brand has the highest preference and the Patanjali brand has the lowest preference in terms of Brand Image aspect.

TABLE:5 SUBSETS OF ANOVA ON QUANTITY

Brand of cream	N	Subset for alpha = 0.05	
		1	2
Patanjali	25	3.28	
Fair and Lovely	26	3.73	3.73
Garnier	30	3.73	3.73
Maybelline	15		4.07
L'Oréal	26		4.08
Himalya	28		4.14

Interpretation

From the above table it can be stipulated that the Himalya brand has the highest preference and the Patanjali brand has the lowest preference in terms of Quantity aspect.

Table:6 REGRESSION

Model B		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		Std. Error	Beta			
	(Constant)	.171	.530		.322	.748
	Quality	.415	.075	.353	5.534	.000
	Price	.468	.072	.415	6.467	.000
	Brand image	.183	.067	.179	2.748	.007
	Promo offers	.004	.070	.003	.054	.957
	Advertisement	-.124	.198	-.038	-.630	.530

Interpretation:

H1: Quality will have a significant relationship towards consumer buying behaviour on fairness cream.

Here p=0.000

Here p is less than 0.05 so we reject null hypothesis and we accept alternative hypothesis.

H2: Price will have a significant relationship towards consumer buying behaviour on fairness cream

Here p=0.000

Here p value is less than 0.05 so we reject null hypothesis and we accept alternative hypothesis.

H3: Brand image will have a significant relationship towards consumer buying behaviour on fairness cream.

Here p=0.007

Here p value is greater than 0.05 so we reject alternative hypothesis and we accept null hypothesis.

H4: Promo offers will not have significant relationship towards consumer buying behaviour on fairness cream.

Here p=0.957

Here p value is greater than 0.05 so we reject alternative hypothesis and we accept null hypothesis.

H5: Advertisement will not have significant relationship towards consumer buying behaviour on fairness cream

Here p=0.530

Here p value is greater than 0.05 so we reject alternative hypothesis and we accept null hypothesis.

FINDINGS

The increase in number of working women who are conscious about their looks is a big reason for the growth.

Price, quality, brand Image, quantity, fairness is having the much more weightage among the attributes and are much influencing the behavior of the Consumers to take the purchase decision.

The strong growth in the demand and success of new players in the market has prompted existing players to venture into cross categorization.

Multinational companies will compete effectively in Specialty Products such as sun-protection and antistress cream, where a higher price may be justified in the consumer's mind due to the specific value addition

The lotion category is the new and emerging area which is slowly replacing creams. Lotions include moisturizing toners, astringent item till recently a small market., but companies are focusing their efforts to project its value into the mind of the customer.

SUGGESTIONS

Many fairness cream entered into the market with USP and are ensuring that the skin will become glow. According to my knowledge "Brand" means promise and at any cost of time it must become true when come to reality. Some brands are confined to make promises

and over exaggerate that the skin gets charm within weeks. There is a scope for the companies if they rely on WOMM concept (use, experience & recommend through mouth marketing) through personal touch strong emotional bond could be established between the brand and to the customer rather than to relying on brand ambassador voice. It's a universal problem everybody is facing and required to protect themselves from pollution and UV rays. So it is the responsibility of the company to think from customer end and produce the lotion or creams with affordable price, there by both could get benefited from four dimensions.1. CSR 2. unmet social problems 3. Cross selling opportunities for the company 4. Grab significant market share and enhance customer base. If the company think in empathetic way to produce the product with less cost as recommended it can have a page in the history

CONCLUSION

The potential demand for fairness creams will be increased in future due to the ever control pollution and depletion of ozone, changing life styles. As most of the Indians are very much bothered about their color complexion the fairness creams enjoy very good market growth rate when compared with other related product categories It is not sufficient if a company has the right product with right quality. It has to be communicated properly to the target audience. Usage, price is not matter whether the product is having the ability to meet the requirements of customer.

Ethical Clearance- Not Applicable

Source of Funding- Self

Conflict of Interest - Nil

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DOI Numher: 10.5958/0976-5506.2018.01358.X

Bicondylar Tibial Fractures: Comparison of Single Lateral Locked Plate and Double Incision Dual Plate Osteosynthesis

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ABSTRACT

Over the years, the incidence of high velocity tibial plateau fractures has increased mainly due to increase in motor vehicle accidents, sports related injuries and falls.Currently there are different surgical treatment options available for treating these high energy tibial plateau fractures. However no single treatment method has proven to be uniformly successful. This was a prospective study comparing two groups, one treated by single lateral locked plating (SLLP) and the other by double incision dual plating (DIDP) and followed for a period of 1 year. All fractures in both groups united. There was higher average operating time and radiation exposure in DIDP group. Incidence of soft tissue complications were higher in DIDP group. Incidence of loss of reduction and alignment were higher in SLLP group. Functional outcome at the end of one year follow-up was better in DIDP group.

Keywords: *Tibial bicondylar fractures, single vs double.*

INTRODUCTION

Tibial condyle fractures are one of the commonest intraarticular fractures comprising of 1% of all fractures and 8% of the fractures in elderly[1]. Over the years, the incidence of high velocity tibial plateau fractures has increased mainly due to increase in motor vehicle accidents, sports related injuries and falls. The aim of the surgical treatment of these fractures is to restore and preserve functional, pain free range of movements in the knee by accurate anatomical restoration of the articular surfaces of the tibial condyles.

Currently there are different surgical treatment options available for treating these high energy tibial plateau fractures. However no single treatment method has proven to be uniformly successful. There is still a controversy in selecting the type of surgical treatment, with some recommending single incision and unilateral locked plate on the lateral side[2,3] and others recommending two separate incision with dual medial and lateral plating[4]. Each of these methods are having their own advantages and complications. [2,3,5,6]

Horwitz et al.[7] found that double plating with either a dual buttress construct or a buttress/medial antiglide construct has significantly higher stability than an isolated lateral buttress plate.However, osteosynthesis is dependent on the balance between achieving rigid fixation and preservation of the local biological environment and this balance may be compromised with dual plating (DP).[8]

The purpose of this study was to compare clinical, radiological results and complication rates in single lateral locked plate vs double incision dual plating approaches.

MATERIAL AND METHOD

This study was conducted in Father Muller Medical College and Hospitals between September 2013 to

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August 2015. Institutional ethical committee clearance was taken for this study. This was a prospective study. Inclusion criteria included patients presenting with Schatzker's Type 5 and Type 6 tibial condyle fractures. Exclusion criteria included polytrauma patients, type 3a, 3b & 3c open fractures, patients with severe comorbidities, patients who could not be operated within 15 days after initial injury. This was a surgeon specific cohort study, with one group of doctors doing single lateral locked plate and the other group doing double incision and dual plating.

Surgical technique of single lateral locked plating (SLLP): Patient was placed in supine position on a radiolucent table. Procedure was carried out under Tourniquet. Fracture was opened using a lateral submeniscal approach. Fracture fragments were reduced, depressed fragments were elevated and temporarily fixed with k wires under image intensifier control. Metaphyseal defects were filled with cortico cancellous bone graft from iliac crest. Final fixation was with lateral locked plate which can accommodate 6.5 mm locking cancellous screws and 4.9 mm locking screws. Tourniquet was deflated and hemostasis achieved. Wound was closed in layers (**Figure 1)**.

Surgical technique of double incision dual plating (DIDL): Patient was placed in supine position on a radiolucent table. Procedure was carried out under Tourniquet. First, medial condyle was approached with a posteromedial approach and fragments reduced and fixed with 3.5 mm buttress plate on the posteromedial surface. Then lateral submeniscal approach was used to reduce lateral condyle fragments, elevate the depressed fragments and then fixed with a lateral locking plate similar to SLLP group. Metaphyseal defects were filled up with cortico-cancellous bone graft. Tourniquet was released, hemostasis was achieved and wound was closed in layers (**Figure 2)**.

Same post operative protocol was used in both the groups. Knee range of movements were started after 3 weeks. Partial weight bearing was started from 6 weeks and full weight bearing was allowed after radiological union. Patients were examined clinically and radiologicaly at the end of 1 month, 3 months, 6 months and 1 year by the first author.

Informed consent was taken from all the patients before enrollment in the study. There were 14 patients in SLLP group, out of which 2 were lost to follow-up. There were 16 patients in DIDP plate, one of whom was lost to follow up. Statistical analysis was done using unpaired t test and Mann Whitney tests and p value <0.05 was taken as statistically significant.

Table 1 : Comparison of variables between SLLP and DIDP groups.

	SLLP	DIDP	P
Number	12	15	0.312
Average age	34years	40years	0.162
Male:Female	4:1	4:1	0.81
Time since injury	8 days	10days	0.45
Average operative time	87 mins	130 mins	0.02
Average image intensifier usage	3.8 mins	6.5 mins	0.03
Average time for radiological union	22 weeks	20 weeks	0.47
Superficial infection	1	2	0.08
Deep infection	0	2	0.03
Loss of reduction and alignment	2	0	0.02
Average functional score after 1 year followup (HSS Score)	61	79	0.04

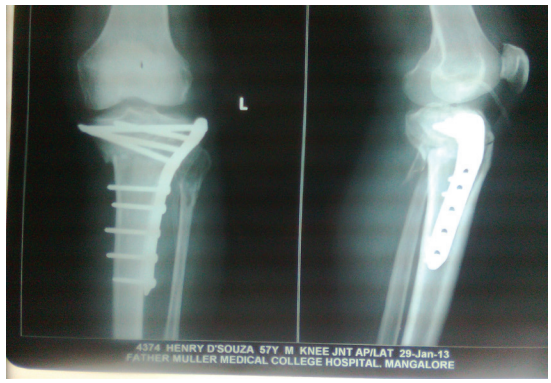

Figure 1: Bicondylar fracture treated by SLLP.

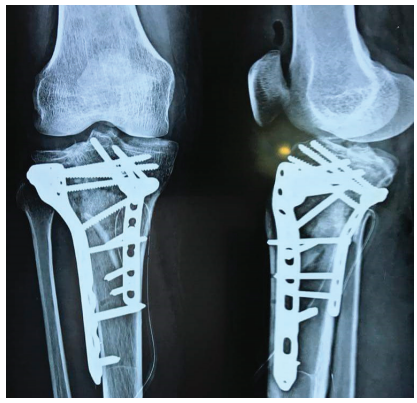

Figure 2: Bicondylar fracture treated by DIDP

RESULTS

There were 12 patients in SLLP group and 15 patients in DIDP group who completed minimum of 1 year of follow up. Both the groups were comparable in terms of age and sex distribution. Average age in SLLP group was 34 years and 40 in DIDP group. Average time interval between injury to surgery was 8 days in SLLP group and 10 days in DIDP group. Average operative time and radiation exposure was more in DIDP group compared to SLLP group, which was statistically significant. All the fractures united and average time for union was comparable in both the goups. 1 Patient in SLLP group and 2 patients in DIDP group developed superficial wound infection , which were treated by extended antibiotic coverage . 2 patients in DIDP group developed deep infection compared to none in SLLP group, which was statistically significant. These deep infections were treated by multiple debridement and antibiotic beads. One of them resolved completely. Other one required implant removal at 8 months and flap coverage after fracture union. Even though all the fractures united, 2 cases in SLLP group went for loss of alignment and varus collapse compared to none in DIDP group, which was statistically significant. At the end of 1 year follow-up, average functional outcome was better in DIDP group when compared to SLLP group.

DISCUSSION

The tibial plateau fractures are complex injuries necessitating a restoration of both articular congruity as well as axial alignment of lower extremity and frequently associated with soft tissue injury.[8]

The goals of operative treatment for TPFs were anatomic reduction, especially in restoration of articular congruity, stable fixation for early rehabilitation, and avoidance of complications, particularly infection and non-union.

The treatment of bicondylar fractures is challenging and ideal method still controversial with risk of unsatisfactory results if not treated properly[9,10].

In our study even though all the fractures united in both the groups, there were statistically signicant differences between some of the variables in them.

Mean operative time and radiation exposure was lower in SLLP group when compared to DIDP group.The single lateral locked plate may theoretically shorten the operating time because of unilateral fixation and use of self tapping screws. However, reduction of fragments and restoration of alignment for bicondylar fractures through a single lateral incision are technically demanding and this may offset any decreases in operating time during fracture fixation[10].

There were higher soft tissue complications in DIDP group, compared to SLLP group. This could be related to longer operative time and the need for more dissection in DIDP group.. Papers reporting the results of dual plating through a single extensile incision have shown an incidence of deep wound infection of 23–88%[11,12]. With the two-incision double plating technique, the incidence drops to 4.7–8.4%[6,13]. With LISS fixation, it is reported to range from 0 to 22%[14,15].

There was higher incidence of loss of reduction and alignment in SLLP group when compared to DIDP group. Biomechanically dual plates provide better structural support to both the condyles, thereby preventing collapse.

Barei et al. [6,16] and Ali et al.[17] reported that single lateral locked plating may not be as effective as dual plating in managing bicondylar tibial plateau fractures. Horvitz et al.[7] found that double plating with either a dual buttress construct or a lateral buttress/medial antiglide construct has significantly higher stability than an isolated lateral buttress plate.

Higgins et al.[8] performed a biomechanical study and concluded that dual-plate fixation allows less subsidence in this bicondylar tibial plateau cadaveric model when compared to isolated locked lateral plates.

Functional outcome assessed using HSS scoring at the end of one year was better in DIDP group. This is directly related to incidence of loss of reduction and alignment in SLLP group, affecting the knee biomechanics. However long term complications like post traumatic arthritis, which has significant bearing on knee function have not been included in this study.

Limitations of this study are less sample size, non randomised groups and medium term followup.

CONCLUSIONS

We conclude that double incisions dual plate osteosynthesis is better than single lateral locked plating for the management of bicondylar tibial fractures, as far

as manitainance of reduction and alignment and medium term functional outcome are concerned, even though it is associated with higher soft tissue complication rates. However, these findings need to be substantiated with long term studies with bigger samples.

Acknowledgment: Nil

Conflict of Interest: Nil

Source of Funding: Self

Ethical Clearance: Institutional Ethical committee clearance taken.

Abbreviations: SLLP: single lateral locked plating

DIDP: double incision dual plating

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DOI Numher: 10.5958/0976-5506.2018.01359.1

Prevalence of Protein Energy Malnutrition among Underfive Children

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ABSTRACT

Objectives: To determine the prevalence of PEM among under five children residing at rural areas of Kutch-Gujarat.

Method: A pilot study conducted among underfive children. Totally 73 were registered and assess to determine the prevalence. In vivo-Bio physiological measuring instructs used for assessment. Measured values are applied on **WHO Anthro v.3.22** software to identify the PEM children and

Results: 73 underfive children (50.6%) 34 were identified as a moderate PEM. 37 children were healthy. 2(2.7%) were severe PEM. As per WHO classification z scores based on height for age 45.2% (33) children are Normal height for age,52.1%(38) children were stunted (< -2SD) and 2.7%(2) were severely stunted (< -3SD). Based on weight for age 50.6% (37) were healthy, 46.6% (34) were underweight (< -2SD) and 2.7% (2) severe underweight (< -3SD). As per weight for height 47.9% (35) were healthy, 49.3 % (36) were wasted (< -2SD) and 2.7% (2) were severely wasted (< -2SD). There was a significant association between the prevalence and demographic variables such as education, Type of family, family monthly income and dietary pattern. There was no significant association between the prevalence and demographic variables such as age, occupation, number of under five children in the family and sources of health information.

Conclusion: The higher prevalence of PEM was found among under five children in rural areas of Kutch.

Keywords: *Prevalence, Protein Energy Malnutrition, Under five children, Rural area.*

INTRODUCTION

Food is an important and basic biological need of man. It is essential for life, growth, repair of the human body, regulation of body mechanisms and production of energy for work.[1] Nutrition plays the most important part in growth.[2] Nutritional deficiency disorders are major public health problem in India and other developing countries. [3] Protein Energy malnutrition also a part in that. It is not only an important cause of childhood morbidity and mortality but leads to permanent impairment of physical and possible of mental growth of those who survive. [4]

The current concept of protein energy malnutrition is that of clinical forms- Kwashiorkor and Marasmus. Kwashiorkor and Nutritional Marasmus are two extreme forms of PEM.[4] Kwashiorkor is due to deficient intake of both protein and calories but protein lack is more predominant. Marasmus is due to deficiency of both proteins and calories inadequacy in diet in the recent past with predominant lack of calorie. There is limited data on prevalence of PEM among under five children in the age group of o-5 years. [4]

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The common factors associated with child's age, sex, area of living, socio economic status of the family, environmental sanitation, mothers education, and mothers age are reported by earlier study.[5] In the light of above facts and from the experience of investigator it is observed that there is need to determine the prevalence of PEM among under five children at rural areas.

MATERIALS AND METHOD

A pilot study was conducted among underfive children to determine the prevalence of PEM. [6] Non experimental Survey research design was used in this study. The study was conducted at selected rural areas of Bhuj-Kutch. Population of the study was underfive children. Rural Anganwadies were used as a sampling frame. Simple random sampling technique used to select the samples. The prevalence of PEM was classified according to WHO classification.[7] As per WHO classification they were classified as Normal, Moderate PEM, and Severe PEM. As per height for age, weight for age and weight for height children were classified as Stunted, Underweight and wasting respectively.

The inclusion criteria adopted was: i) children age group 0-5 years those who were not completed five years. ii) Both male and female children were included. iii) underfive children who were willing to participated. The exclusion criteria adopted was: i) children who were not attended anganwadies at the time of assessment. ii) Children who were above 5 years. iii) Urban children were excluded. [8]

All subjects were examine by In vivo Bio physiological measuring instruments such as weighing machine, inch tape, Infanto meter and Shakir's tape were used to measure the height, weight, Midarm circumference, head circumference, and general clinical examination was done to each child. The Obtained values were applied on **WHO Anthro v.3.2.2** software to identify the PEM children.

All identified PEM children were assessed for clinical features associated with PEM. It includes hair changes, skin changes Respiratory infections.GI symptoms and CNS features. All collected quantitative data was expressed in frequency and percentage.

Table 1: Frequency distribution and percentage of prevalence of Protein Energy Malnutrition among under five children. N=73

Sl.No	No. of child as per registered	No. of children attended & assessed	Prevalence of PEM					
			Healthy		Moderate PEM		Severe PEM	
			F	%	F	%	F	%
1	191	73	37	50.7	34	46.6	2	2.7

Table 2: Distribution of Frequency and percentage of samples according to the prevalence of Stunted under five children based on height for age. N=73

Sr. No	Prevalence of stunted under five children								Remarks
	Number of children assessed		No .of children found normal height for age		No. of children found stunted		No. of children found severely stunted		
1	F	%	F	%	F	%	F	%	
	73	**100**	33	**45.2**	38	**52.1**	2	**2.7**	

Table 3 Distribution of Frequency and percentage of samples according to the prevalence of underweight among under five children based on Weight for age. N=73

Sr. No	Prevalence of underweight among under five children								Remarks
	Number of children assessed		No .of children found normal weight for age		No. of children found under weight		No. of children found severely under weight		
	F	%	F	%	F	%	F	%	
1	73	100	37	50.6	34	46.6	2	2.7	

Table 4: Distribution of Frequency and percentage of samples according to the prevalence of wasting among under five children based on Weight for height. N=73

Sr. No	Prevalence of Wasting among under five children								Remarks
	Number of children assessed		No .of children found normal weight for height		No. of children found wasted		No. of children found severe wasting		
	F	%	F	%	F	%	F	%	
1	73	100	35	47.9	36	49.3	2	2.7	

RESULTS

A total of 118 children were registered with selected two rural anganwadies of Bhuj-Kutch. Among them 73 children were attended and all were assessed to identify the prevalence of PEM. According to WHO classification 50.6 %(37) children were found Normal, 46.7 %(34) were moderate PEM and 2.7 %(2) were found severe PEM. Based on height for age 45.2% (33) children were found normal, 52.1% (38) were stunted (<-2SD), where as 2.7% (2) were severely stunted (<-3SD). As per weight for age 50.6% (37) children were found normal, 46.6% (37) were under weight (<-2SD), where as 2.7% (2) were severely under weight (<-3SD). According to weight for height 47.9% (35) children were found normal, 49.3% (36) were wasted (<-2SD), and where as 2.7% (2) were severely wasted (<-3SD). The results of general clinical examinations performed among 36 PEM identified underfive children shows 41.6 %(15) were having symptoms of hair changes, 36.1 %(13) were having symptoms of skin changes, 58.3 %(21) were reported respiratory symptoms like cold and cough, 63.8% (23) were reported GI symptoms such as vomiting, diarrhea, crave for food and loss of appetite. And 52.7% (19) were looked like lethargy and dull.

There was a significant association between the prevalence and demographic variables such as education, Type of family, family monthly income and dietary pattern. There was no significant association between the prevalence and demographic variables such as age, occupation, number of under five children in the family and sources of health information.

DISCUSSION:

In the present study 46.7 %(34) were moderate PEM and 2.7 %(2) were found severe PEM. A similar study was conducted earlier among under five children at Salem, Tamilnadu, reported prevalence of PEM 29% moderate PEM and 36% severe PEM.[9] Another study conducted in India also reported similar results. It was found that 69.87% in the age group of 3-6 years as compared to other age group. [10]

According to the weight for age higher prevalence of study shows 52.1% (38), children were stunted (<

-2SD) where as 2.7% (2) were severely wasted (<-3SD). Similar study have been conducted by National Family Health Survey (NFHS) among under five children at another district of Gujarat, reported 38.5% of the children were stunted.[11]

The prevalence of underweight among under five children found 46.6% (37) were under weight (<-2SD), where as 2.7% (2) were severely underweight (<-3SD). An earlier study conducted at Haryana district of India reported 41.3% were under weight and 14% were severe under weight.[12]

The prevalence of rate of wasting among under five children found 49.3% (36) were wasted (<-2SD), and where as 2.7% (2) were severely wasted (<-3SD). The similar study was reported 26.4% children were wasted and 9.5 % were severely wasted. [11]

Comparing prevalence of PEM with socio economic status of the family, it was found that higher percentage 50% of children were living in low socio economic status. This could be due to low socio economic status might cause parents unable to spend for the child nutrition. An earlier study conducted at Rithora reported the same. [10]

The higher prevalence of PEM found with the children who were belongs to joint family. It could be due to more number of people in the might be busy with their household activities. Similar results have been reported by earlier studies. [10]

The prevalence of PEM is assumed to be result of vegetarian food habit. This could be due to they were not getting first class protein which will be sourced by egg, meat, fish and other animal products. Also might be due to less knowledge about kitchen garden. An earlier study also reported the same result. [10]

CONCLUSION

PEM is complex and major health problem in developing countries like India. Government of India focusing to reduce the PEM and other associated symptoms among under five children. Also awareness of Prevention of PEM among should be creating among the mothers of under five children.

Compliance with ethical Standards: None

Conflict of Interest : None

Sources of Funding : None

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DOI Numher: 10.5958/0976-5506.2018.01409.2

Analysis of Risk Factors of Personality Type with Hypertension Occurrence of Young Adult

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ABSTRACT

Hypertension is the third leading cause of death in Indonesia. Hypertension occurs when the systolic blood pressure was 140 mmHg and 90 mmHg diastolic. The continous increase of blood pressure will increase a person's risk of stroke and coronary heart disease. The personality types is affected the recurrence of hypertension where a person used to coping stress. This research was analytic study with case control study design with non-matching procedure which aims to analyze the risk factors of hypertension based on personality types. The population of this study was all the residents in the working area of Benu-Benua health center, district of Kendari which was 25 105 people. Samples in the study sample divided into 50 cases and 50 control samples. Tests were analyzed using Odds Ratio (OR) at the 95% confidence level. The results shows that the person with personality type A had an OR of 12.571, 95% CI (3.434 to 46.018) after comparing with the personality type B, which means respondents with personality type A have a risk 12.571 times more likely to obtain hypertension rather than person with personality type B, type C personality OR was 2.154, 95% CI (0.562 to 8.253) after comparing with the personality type B, which means respondents with personality type C have a risk 2,154 times more likely to obtain hypertension than personality type B, and person with personality type D the OR was 6.400, 95% CI (1.818 to 22.536) after comparing with the personality type B, which means respondents with type D personality had a risk 6,400 times more likely to obtain hypertension than personality type B. It is sugessted for policy maker in order to prevent hypertension by determine the personality of a a person personality to be included as a program so early prevention of hypertension can be conducted.

Keywords: *Hypertension, personality type A, personality type B, personality type C, personality type D.*

INTRODUCTION

Non-communicable diseases are a major cause of death in the world. There were 17 million deaths due to non-communicable diseases and 80% due to cardiovascular disease occurring in lower middle income countries. The highest case of death because of non communicable disease in Asia, one of it was in south east Asia. The data from the WHO shows that hypertension is estimated to cause 7.5 million deaths, or 12.8% of total annual deaths,personwho can have hypertension if the systolic blood pressure was 140 mmHg and factors, namely the increase in blood pressure. The Increasing a person's blood pressure will diastolic blood pressure of 90 mmHg. As for the high mortality rates due to the major risk increase the risk of stroke and coronary heart disease[1].

It is estimated that in 2025 in developing countries increased cases of hypertension approximately 80% of the 639 million cases in 2000 to 1.15 milyar[2]. National Health and Nutrition Examination Survey data from 2005-2008 in the United States showed 76.4 million people aged ≥20 years were hypertensive, meaning one in three adults had hypertension and one third were unaware[3]. Whereas around 40% of deaths at age <65 years stems from high blood pressure. Hypertension is

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generally started at a young age, approximately 5-10% occurred in the 20-30 year age[4].Hypertension is the third leading cause of death in Indonesia for all ages (6.8%), after stroke (15.4%) and tuberculosis (7.5%)[5].

Furthermore, hypertension patients in the city of Kendari in 2012 there were 5778 cases, in 2013 there were 11,615 cases, in 2014 there were 9811 cases, in 2015 there were 13,137 cases [6]. While the Benu-Benua Health Center received the highest hypertension visit in Kendari. In 2013 namely; 1145 cases, in 2014 there were 1,231 cases and 2015 there were 1,929 cases. In addition, the number of cases of hypertension in young adults (18-45 years) is quite high. In 2013 there were 104 cases, 2014 there were 134 cases and 2015 there were 139 cases[7]. Basically Hypertension can also be affected by the type of personality. Personality types affect the recurrence of hypertension as seen from the way a person uses coping stress[8].

Personality has something much more fundamental issue, which is composed of the aspects which each show a characteristic/specific trait that determines the behavior ofan individual. Differences in individual factors affect the behavior and lifestyle. Thethings are affecting of level or degree hypertensions patients. Personality types affect the recurrence of hypertension as seen from the way a person uses coping stress.

Personality type A has characteristics, as follows: it has a low patience level, in a hurry to do anything, have high expectations for success, and have a high desire to Compete, aggressive and irritable. The personality types B have a tendency of people covered, the high level of patience, work slowly, talking with regular and relaxed, patient and have low competitiveness, have a low desire to Compete, less aggressive, and not Easily angry[9]. Next personality type C is a pleasant person, but stressed, tends to internalize anger and anxiety and difficult, to express emotions[10]. The personality type D is derived from the word "Distressed" roommates is a combination of Negative Affectivity (NA) and the Social Inhibition (SI), personality type Dhas been Reported in various studies related to do with the Increase in the incidence of various cardiovascular diseases and Decreased quality of life In These Patients[11].

METHOD

These studies was an Case Control Study. where the population in this research which is all the residents who are living in Benu-Benua Health Center Working area of Kendari which was 25 098 people. The sample in this study was two cases hypertension and controls who did not suffer from hypertension which was 50 people that obtained using purposive sampling techniques.

RESULTS

Univariate Analysis

Personality types affect people's resistance when in stress. The Complex psychological characteristics of individuals that arise from unique behaviors.

Table 1: Distribution characteristics of individuals

No.	Personality Type	Amount	
		n	%
1	Personality Type A	29	29
2	Personality Type B	25	25
3	Personality Type C	20	20
4	Personality Type D	26	26
Total		**100**	**100**

Analysis of bivariate

The Personality Type Risk Factors with Genesis Age Young Adult Hypertension. The results of the chi-square test analysis.

Table 2: Type Risk Factors with Genesis Age Young Adult Hypertension

No.	Personality Type	Hypertension				Amount		Value p
		Cases		Controls				
		n	%	n	%	n	%	
1	PersonalityType A	22	44	7	14	29	29	0,000
2	PersonalityType B	5	10	20	20	25	26	
3	PersonalityType C	7	14	13	26	20	20	
4	Personality Type D	16	32	10	40	26	25	
Total		**50**	**100**	**50**	**100**	**100**	**100**	

Based on the analysis chi-square test personality type A, type B personality, personality type C and type D personality on the incidence of hypertension was obtained p = 0.000 thus the correlation between personality type with hypertension. So the personality type B used as a comparison to get the value of OR in this study because of the personality type B had a lower risk of incident hypertension. The analysis of personality type risk factors with Genesis Age Young Adult Hypertension.

Table 3: Type risk factors with Genesis Age Young Adult Hypertension

No.	Personality Type	Hipertension				Amount		Value p	OR (CI 95%)
		Cases		Controls					
		n	%	n	%	n	%		
1	Personality Type A	22	44	7	14	29	29	0,000	12.571 (3,434-46,018)
2	Personality Type C	7	14	13	26	20	20	0,258	2.154 (0,562-8,253)
3	Personality Type D	16	32	10	40	26	25	0,003	6.400 (1,818-22,536)
4	Personality Type B	5	10	20	20	25	26	Comparison	
Total		**50**	**100**	**50**	**100**	**100**	**100**		

Based on Table 3 shows that of the 50 respondents case, there are 22 people (44%) with type A personality, 5 (10%) with the personality type B,7 (14%) with the personality type C and 16 people (32%) with the personality type D while the control group there were 7 people (14%) with the type of personality A, 20 (40%) with the personality type B, 13 patients (26%) with the personality type C and 10 people (20%) with type personality D.

The results of the risk factors analysis of type A personality on the incidence of hypertension was obtained OR of 12.571 after comparing the personality type A and type B. personality means that respondents who have type A personalities are at risk of suffering from hypertension 12.571 times greater than the respondents who have a personality type B. because the value range at the 95% confidence level with a CI lower limit =3.434 and the upper limit =46.018 does not include the value of one, the greater the risk of a significant meaning thereby personality type A is a risk factor for hypertension.

The results of the risk factors analysisof personality type C the incidence of hypertension was obtained OR of 2.154 after comparing the personality type C and type B personality means that respondents who have the personality type C have the risk of suffering from hypertension 2,154 times greater than the respondents who have a personality type B. because the value range at the 95% confidence level with a CI lower limit and upper limit =0.562=8.253 includes grades one, the greater the risk is considered not significant thereby personality type C is not a risk factor for hypertension.

The results of the risk factors analysisof type D personality on the incidence of hypertension was obtained OR of 6.400 after comparing between type D personality and personality type B. means that respondents who have type D personality had developed hypertension risk 6,400 times greater than the respondents who have a personality type B. because the value range at the 95% confidence level with a CI lower limit and upper limit =1.818=22.536 does not include the value of one, the greater the risk is considered significant and is therefore personality type D is a risk factor for hypertension.

DISCUSSION

The analysis of the risk factors of A type personality on the incidence of hypertension was obtained OR of 12.571 after comparing the personality type A and type B. personality means that respondents who have type A personalities are at risk of suffering from hypertension 12.571 times greater than the respondents who have a personality type B, the value range at 95% confidence level with a CI lower limit =3.434 and the upper limit =46.018 does not include the value of one, the greater the risk is considered significant and is therefore personality type A is a risk factor for hypertension.

According to the results of analysis obtained that from the number of samples in the case group, the majority of patients with hypertension have a type A personality (44%). Based on their characteristics, people with type A personalities are prone to stress. In terms of stress in relation to the incidence of hypertension is one of the factors that influence it. Stress is one of the circumstances in which the emotional as well as physical individuals that arose as a reaction to defend themselves against the interaction of the environment that are considered to endanger or disturb.

There is a relationship between stress factors with the incidence of hypertension. Means allegedly through sympathetic nerves. In increase sympathetic nerve activity can increase blood pressure intetmitten. Stress can trigger an increase in the hormone adrenaline and kartisol, also make people have bad eating habits, and smoking. Conditions such circumstances if not addressed could be a factor of hypertension. Controlling stress have a major impact on the reduction of blood pressure.

The pattern of behavior of type A personality is to have a competitive attitude high, serious in doing the task, the task quickly, always racing against time, can not wait, prone to stress, often in a hurry, aggressive, willing to oppose against the other to get what desideratum, hurry in determining something, assertive, perfectionist, polyphasic, ambitious, and have very high standards for themselves. Individuals with personality type A is a victim of feelings of self-doubt that continuously they force themselves to accomplish more in a short time.

The results of the analysis of the risk factors of personality type C the incidence of hypertension was obtained OR of 2.154 after comparing the personality type C and type B personality means that respondents who have the personality type C have the risk of suffering from hypertension 2,154 times greater than the respondents who have a personality type B. because the value range at the 95% confidence level with a CI lower limit and upper limit =0.562=8.253 includes grades one, the greater the risk is considered not significant thereby personality type C is not a risk factor for hypertension.

Furthermore, personality type C is a pleasant person, but stressed, which tends to suppress their anger and anxiety and difficult to express emotion. Personality type C so that it can suddenly change from happy to sad directly and vice versa. Difficulties they did not assess things at face value and are interested to find out exactly how things worked. Someone with a personality type C may lead to angry quickly, emotionally unstable and difficult to forgive others so that it can cause lead to hypertension. But in this study, although the respondent has the personality type C level of anger always arises quickly, but it apparently did not make the respondent be stress that can trigger a rise in blood pressure, because the respondent was able to control himself so as not easily stressed, so that the increase in blood pressure can resolved.

Based on analysis of personality type C (CI=0.562 to 8.253), included within the scope of the value of 1, it is considered not significant thereby personality type C is not a risk factor for hypertension. It is also due to the presence of more meaningful variables significantly compared with the type C. This was evidenced at the interview directly for a Type C personality fewer categories in the case group ie 7 respondents which means respondents with other more dominant personality type.

The results of the analysis of the risk factors of type D personality on the incidence of hypertension was obtained OR of 6.400 after comparing between type D personality and personality type B. This means that respondents who have type D personality had developed hypertension risk 6,400 times greater than the respondents who have a personality type B. individuals with type D personality is associated with increased levels of the hormone cortisol due to prolonged stress experienced by the individual[12].

While the type D personality is associated picture as a tendency toward negative affect that worry, irritability, moodiness and social barriers that silence and lack of confidence (Denollet, 2005). Type D individuals with

through experience negative emotions (such as anxiety, sadness, anger) all the time and the situation and remove the emotion of expression in social interaction afraid of how others react.

CONCLUSION

Personality type A is a risk factor for hypertension with OR 12 571 or 12 571 times more at risk than the personality type B.

Personality type C is not a risk factor for hypertension with OR 2.154 (CI 0562-8253) then it is not considered meaningful.

Personality type D is a risk factor for hypertension with OR 6.400 or 6.400 times more at risk than the personality type B.

SUGGESTION

It is expected to recognize the personality type of each person, in order to control or control emotions and factors that could affect efforts to prevent hypertension as early as possible.

It is expected for Health Center and related institutions can improve health promotion efforts, especially the problem of hypertension and the factors that influence it, including personality type and other matters relating to risk factors of hypertension. Giving health promotion is not enough. In addition, the clinic along with other relevant agencies are expected to make efforts to find cases of hypertension (screening), because many people do not know that they was suffering from hypertension.

For further research is expected to continue this research with another design, to know with more certainty how the relationship between personality type and hypertension.

Ethical Clearance: The ethical clearance was taken from Faculty committee and community agreement.

Source of Funding: The funding of this research comes from all authors' contribution.

Conflict of Interest: Authors declares that there is no any conflict of interest within this research.

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DOI Numher: 10.5958/0976-5506.2018.01361.X

The Self-Care Learning Exchange (SCLE) Model: A Model for Promoting Nutrition in Malnourished Children in Indonesia

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ABSTRACT

Background: The public health problem that developing countries face, including Indonesia, especially Surabaya, is Malnutrition. **Aim:** This study aims to produce a self-care learning exchange model for families with malnourished children in Surabaya, Indonesia. **Method:** The study used a research and development approach undertaken in three stages: literature review and field observation, a survey using the Delphi technique to obtain consensus about the model, and a focus group discussion. The research involved a sample of 169 respondents selected by purposive sampling. Data were collected with the help of questionnaires and interviews. **Results:** The five components of the SCLE model that are important for improving the nutritional needs of malnourished children include planning, implementation, evaluation, timing and indicators of success. **Conclusion:** SCLE model could be used as a complementary solution to help families overcome the malnutrition problems, by emphasizing the shared learning aspect in the process of transferring knowledge and parenting behaviour.

Keywords*: Self-Care, Learning Exchange, Malnutrition, Children, Nursing*

INTRODUCTION

Lack of nutrition is a public health problem that is experienced by developing countries, including Indonesia, especially Surabaya.[1] This second largest Indonesian city, after Jakarta, still suffers from malnutrition, as 1.2% of children that are less than five-years-old are malnourished and 12.3% of them lack proper nutrition.[2]

Various efforts have been made by the Surabaya city government, including POSYANDU (a term used for integrated health service centre in Indonesia) activities, counselling, supplementary feeding, home-to-home monitoring, healthy food cooking demonstration, and healthy toddler classes, along with traditional treatment approaches, innovation of Formula 100 (F100) consisting of milk, cooking oil and electrolytes or mineral solutions, and a toddler mentoring program offered to healthy families for 9 months.[3, 4]

In addition, in his research, Ayu declared that nutritional assistance programs can overcome the problem of malnutrition.[5] While Sartika stated that the improvement of nutritional status can be realized through the utilization of health service programs.[6] Moreover, Fitriyanti & Mulyati pointed out that Supplementary Feeding for Recovery (SVR) can restore nutritional status.[7] Huriah et al. mentioned that the nutritional status of children can be enhanced through home care programs.[8]

Without overlooking the above findings, a complementary solution to help families overcome malnutrition problems is to find a model appropriate for dealing with the main cause of child malnutrition, which is wrongful care. This model is the model of learning self-care for malnourished children. The model is oriented towards self-reliance of the families with malnourished children, so that they are able to practice self-care properly.[9] The model begins with assessment, followed by planning learning needs, implementation, and lastly, evaluation of the learning process. The

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purpose of this study is to explain how the self-care learning exchange model with help alleviate the issue of child malnourishment which results from erroneous care.

METHOD

This study used three stages of model development: Stage 1, where the model was initially designed after conducting literature review and field observation; Stage 2, in which a survey was conducted by Delphi technique; and Stage 3, where a focus group discussion was held with experts. This last activity included validating the model design by conducting a focus group discussion to determine the feasibility of the model system to be applied, of the study's focus and the model framework.[10,11]

Stage 1: Creating an Initial Model Design

To make the initial model design, literature study and field observation were conducted to devise a survey involving 60 respondents selected by simple random sampling. The sample inclusion criteria were families (mothers) who have malnourished children and are willing to participate in research on the need for a self-care learning exchange model. The survey used a questionnaire with 25 question items divided into five categories, comprising the need for self-care learning exchange planning, implementation of self-care learning, self-care exchange evaluation, self-care learning exchange time, and indicators of effective self-care exchange for children with malnutrition. Each question concerning the need for a self-care learning exchange model consisted of two choices, namely, how likely can the model be applied, and how important is it to apply the model, using the Likert scale of 1 to 5, with 1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, and 5 = strongly agree. Assessment of questions was done by calculating the mean and standard deviation of each question in the five categories. The average value that correlated to the necessity of a model was more than 4.

Stage 2: Conducting a Survey with the Delphi Technique

A survey on the need for a model was undertaken by involving 10 experts from various disciplines selected by simple random sampling. These experts analysed and reviewed the topic from a scientist's perspective, which helped in obtaining information and responses as a reinforcement of the development and feasibility of the self-care learning exchange model.

Stage 3: Conducting a Focus Group DiscussionA focus group discussion was held to conduct a feasibility examination of the developed self-care learning model. The focus group consisted of the respondent families (mothers) who would apply the self-care learning exchange model, and a panel of 10 experts involved in providing model feasibility analysis through the Delphi technique.

RESULTS

The results of this study indicate that there is a need for an exchange model in learning self-care for malnourished children aged less than five years in Surabaya. According to the findings, the model should include self-care need without assistance (80%), self-care need with brainstorming (85%), the need for a learning contract with learning resources (mothers with the same case) (85%), the need to formulate self-care learning materials together with discussion (75%), the need to utilize available media such as pictures (90%), direct learning needs in mothers with similar cases (85%), the need for evaluation of self-care group learning (90%), and the need for self-care study once a week for a month. The results are shown in Table 1.

Table 1. Results of the Delphi Survey

Need for self-care learning exchange	Feasibility (range 1-5)		Importance (range 1-5)	
	Mean	SD	Mean	SD
Self-Care Learning Exchange Planning				

Cont... **Table 1. Results of the Delphi Survey**

Learning Contract Formulation of self-care learning materials Media and learning tools. The self-care learning exchange is designed together (in a group) through brainstorming/ discussion and by asking health workers (nurse assistants) directly.	4.62 4.60 4.40 4.80	0.24 0.17 0.52 0.42	4.72 4.68 4.40 4.80	0.24 0.21 0.52 0.42
Implementation of self-care learning	4.73	0.18	4.77	0.22
Self-care learning exchange evaluation	4.70	0.22	4.73	0.26

Based on Table 1, the exchange model in learning self-care for less-nourished toddlers by the family (mother) in Surabaya, especially in undernourished areas identified in this research, can be realized through three stages: planning, implementation and evaluation as follows:

The planning stage is to project what should be done in the implementation phase. This planning stage includes the identification of the self-care learning needs of malnourished children, the self-care learning contract of malnourished children, the formulation of learning materials on the self-care of malnourished children, and choosing media and learning tools on the self-care of children suffering from malnutrition.

In the implementation stage, the plans are actuated, in that, mothers of toddlers learn together with mothers of children under five who lack nutrition. Implementation begins with guidance about intimacy, followed by exchanging learning experience from group learning organizations and application of learning techniques, such as brainstorming, roundtable discussion, direct practice, questions and answers, and simulation. For this stage, the average mother wants the activity to be held one time a week for one month.

In the evaluation stage, the activities are evaluated altogether either through a test or non-test, both practically and orally. In the application of self-care learning exchange, more emphasis is given on form and type of evaluation that is based on the mother's involvement and learning resources.

DISCUSSION

Results of the study showed that the exchange model of self-care learning is most needed in malnourished families. This is in line with Mulyana's findings whose principle in learning exchange is based on the attitude that changes learning approaches.[12] In this principle, the learning process stresses more on group dynamics, whereas according to Bandura, there are three approaches in the learning process: confidence-oriented approach, feeling-oriented approach and behaviour-oriented approach.[12]

In a confidence-oriented approach, it is assumed that a person can change his or her attachment to an object by conveying new information. The concept of learning exchange in nursing is derived from the concept of learning exchange which denotes a systematic and deliberate effort to create conditions for learning activities to occur.[12] Learning exchange can be understood through the theory of interaction.[13] Which emphasizes that two or more people are interdependent in achieving positive results and functions, not only in the interest of the individual but also in the interest of the group.

Furthermore, the concept of learning exchange contains several principles, such as the humanist principle and principle of attitude learning, both of which are very appropriate to practice in family nursing services because health problems are very much caused by behavioural factors. As stated by Mulyana.[12] The principle of humanist learning is based on a flow that emphasizes the importance of cognitive and affective objectives. From this principle, the efforts to increase knowledge about self-care, especially for children from undernourished families, are indispensable, because in the humanist school, targets are active actors formulating a transactional strategy with their environment.[12]

Another principle of learning exchange is based on the attitude-change learning approach, which has three orientations: the orientation of belief, the orientation of feeling and the orientation of behaviour. These orientations suggest that a person can alter his or her

attitude if his or her beliefs, feelings and behaviour are modified beforehand. The three approaches are derived from the model of cognitive consistency, which includes the balance theory, the harmony theory and the non-conformity theory.[12] According to the balance theory, balance is needed in the affective domain between an individual and its environment, particularly when there is an imbalance that can change attitudes and behaviour. Similarly, the harmony theory, developed by Osgood and Tannenbaum, underscores the harmony of relationships, and thus shows that disharmony in one's relationship will change attitude. Meanwhile, the basis of the last theory is the theory by Festinger, which emphasizes that discrepancies are undesirable because individuals have two opposing cognitions, and that, by changing the opposing cognition, one can create the desired situation.[12]

Based on the self-care theory, the theory of nursing and learning can be used in nursing service as a form of health service for humans that have a biopsychosocial and spiritual needs by using a nursing process approach.[9, 14, 15] Likewise, the self-care and exchange model can be applied in family nursing practices so as to minimize the number of families who have malnourished children.

The nutritional benefits through the application of a self-care learning exchange model can improve the behaviour in malnourished child care. This is supported by the research by Adrian & Kartika, who stated that inadequate care conditions, such as improper feeding from infant to toddler stage, can cause toddlers to frequently suffer from illness due to digestive disruptions.[16] Conditions of prolonged pain can also cause rapid weight loss and make it easier for infants to become malnourished. In addition, the pattern of care in early and exclusive breastfeeding cases, as well as inappropriate consumption of breastfeeding supplements and poor upbringing, can cause children to get fewer intakes of nutritious, varied, and balanced foods, which can lead to malnutrition.[16] Meanwhile, Palombarini AF found that nutritional interventions through daily dietary practices in families can help overcome nutritional problems.[17] This was corroborated by the study by Frota MA, wherein the researcher found that dietary habits and breastfeeding at the age of 0-6 months contribute to child nourishment.[18] Another study supporting the results of this study is that by Ayu, which noticed improvements in the pattern of upbringing before and after the mentoring program in families with less nutrition.[5, 19, 20]

The results showed a significant change in parenting pattern after three months with nutritional assistance. The improvement in childcare practices, especially at the end of nutritional assistance, is closely linked to the improvement of maternal knowledge that plays a dominant role in childcare. It is also correlated with the energy adequacy level in infants with less protein energy, which increased in three months after nutritional assistance, along with their level of protein adequacy. The study shows that nutritional assistance programs have a meaningful effect on improving knowledge and parenting patterns, especially in child feeding practices, which, in turn, will affect the quality and quantity of child feeding. Intervention in the study is in line with the core application of the self-care learning exchange model, which is adopting the way of caring, especially in the practice of malnourished child care by mothers who have successfully cared for children, and from whom aware mothers who have malnourished children can learn directly.[5] Likewise, Hayakawa LY revealed that group support strategies can address the problem of boredom in care.[21, 22]

CONCLUSION

The self-care learning exchange model for malnourished children in Surabaya is a care-oriented model of behavioural change, and includes with three stages: planning, implementation, and evaluation. The planning stage was carried out by the mothers of toddlers collectively by planning the need for self-care learning. Then, the implementation phase was carried out by the under-five toddlers' mothers based on what had been planned in the prior stage, ranging from group learning organizations to application of instructional techniques, such as brainstorming, roundtable discussion, direct practice, questions and answers, and simulation. The evaluation phase, which was implemented after a month of learning exchanges, determined the level of understanding and practice in the care of undernourished children, with the direct involvement of learning resources. The model is able to improve child care practices and nutritional status within three months, so that the model can help overcome the nutritional problems and the causes of malnutrition due to parenting practices.

The suggestion that could be given based on this study is that nurses working in Community Health Centres could facilitate families (mothers) with children

that suffer from malnutrition due to wrongful parenting practices, by applying the self-care learning exchange model. This can be used as a complementary approach model for helping families overcome the problem of malnutrition.

Ethical Approval: This study was approved by the Health Research Ethics Committee (HREC) of the Faculty of Health Science University of Muhammadiyah Surabaya (Approval Letter Ref: 07/FIK/EC/2016 dated 23 July 2017).

Acknowledgement: We gratefully acknowledge the support of the Ministry of Research, Technology and Higher Education of the Republic of Indonesia for funding this research in 2017.

Conflict of Interest: The authors confirm that this article contains no conflict of interest.

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DOI Numher: 10.5958/0976-5506.2018.01362.1

The Development of Islamic Caring Model to Improve Psycho-Spiritual Comfort of Coronary Disease Patients

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ABSTRACT

Objectives: Caring is the essence of the nursing process delivered by nurses in diverse cultural settings exceptionally is Islamic caring. This research aims to develop an Islamic caring model for the psycho-spiritual comfort of coronary disease patients.

Method: The research method used was analytic observational with a cross-sectional design. This research recruited 70 clients from the population of the heart disease patients in three Islamic hospitals by using simple random sampling. Data were collected by questionnaire and analyzed by Partial Least Squares-Structural Equation Modeling (PLS-SEM).

Results: The research showed that there were influences from the nursing and service factors towards Islamic caring with a value of t= 7.79; 2.06. There was influence from Islamic caring towards psycho-spiritual comfort with a value of t= 2.85.

Conclusions: The Islamic caring model is a nurse's behavior that emphasizes Islamic values that include the characteristics of maintaining confidence, compassion, and competence to enhance the patients' psycho-spiritual comfort.

Keywords*: Coronary disease; Caring; Islam; Psychology; Spirituality.*

INTRODUCTION

There has been an increase in the number of coronary disease cases, and it has been shown that the disease often has a big impact on the individual, one of which is anxiety [(1)]. This anxiety issue was also experienced by the coronary disease patients at General Hospital, who became the subjects of this research [(2)]. Patients with moderate anxiety have a 2.3% longer hospitalization period than patients without anxiety or with only mild anxiety [(3)]. Anxiety that is not treated properly can increase the risk of a heart attack that ranges from non-fatal to fatal [(4)]. Research also shows that spirituality or religious behaviors are very helpful in the process of reducing anxiety [(5)]. This spirituality or religious behavior needs to be adjusted to the patients' culture and religion [(6)],[(7)].

Religious-based hospitals, especially those of an Islamic background, have become an alternative medical treatment for Indonesian people. These hospitals are characterized by their Islamic caring principles using spiritual approaches. Islamic caring is caring using the principles of Islam, which are excellence or perfection, always being professional, and always guiding towards kindness in worship and in daily life [(8)],[(9)]. Caring is the essence of nursing as both a science and art in treating patients [(10)]. Islamic caring is the professional attitude of nurses towards patients, their families, and society, characterized by care, kindness, empathy,

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polite therapeutic communication, and responsiveness. They should always give the best service based on the Holy Quran and the acts and sayings of the Prophet Muhammad [11]. The development of Islamic caring in the available literature remains unclear. There is a need for more in-depth studies that focus on these Islamic caring variables and for the development of an Islamic caring model for the psycho-spiritual comfort of coronary disease patients.

MATERIAL AND METHOD

Study design

The research design involved observational analytics with a cross-sectional design to develop an Islamic caring model for the psycho-spiritual comfort of coronary disease patients including the nurse factor and service factor.

Sample and setting

The population of this research were the coronary disease patients being treated in the wards at three Islamic Hospitals in East Java Province of Indonesia. The sample of 70 patients was chosen by simple random sampling. The data collection was adjusted with the criteria of uncomplicated arrhythmias and not being under or in any emergency situation.

Instruments

Patients' background characteristics included age, gender, occupation, health insurance, and formal and non-formal education. The variables of Islamic caring covered the aspects of the nurses themselves, services, patients, Islamic caring, and psycho-spiritual comfort. The variables that form Islamic caring were measured using a questionnaire. The questions were modified by Abdurrouf [11] and Sudalhar [9]. The validity and reliability tests on the questionnaire showed a coefficient score from .30 to .92, and Cronbach's alpha was from .91 to .98.

Data analysis

Data were analyzed using frequency and percentages. The data analysis was conducted using Partial Least Squares-Structural Equation Modeling (PLS-SEM) multi-variant statistics.

Ethical consideration

The study procedures were reviewed and approved by the Ethics Committees on July 11, 2016, decision letter number 425-KEPK. Due to ethical clearance of this study, participants were given information and filled in informed consent before the study.

FINDINGS

The results of the data collection showed that the characteristics of the research subjects are as follows (Table 1). The research subjects were categorized as elderly patients, age 56-64 years old; most of them were male. Their occupations were mostly in the private sector, or as laborers workers. The health insurance for most of them was provided by the National Healthcare and Social Security Agency (BPJS) or National Health Insurance (Askes). Their formal education was mostly of elementary school level. Lastly, most of them had never attended Islamic non-formal education.

Table 1 Sample Characteristics (N=70)

Characteristics	n (%)
Age	
26-35 years old	4 (5.7)
36-45 years old	2 (2.9)
46-55 years old	17 (24.3)
56-64 years old	25 (35.7)
>65 years old	22 (31.4)
Sex	
Male	39 (55.7)
Female	31 (44.3)
Occupation	
Not working	3 (4.3)
Housewives	22 (31.4)
Private company workers/Laborer workers	36 (51.4)
Govt employee/Armed forces/Police/ Retired armed forces or police	9 (12.9)
Health Insurance	
SKTM (for the underprivileged)	13 (18.6)
BPJS/Askes (Govt national insurance schemes)	46 (65.7)
Mandiri (Own costs)	11 (15.7)
Formal Education	
Elementary school	32 (45.7)
Junior high school	14 (20.0)
Senior high school	15 (21.4)
Diploma	1 (1.4)
Bachelor's degree	8 (11.4)

Cont... **Table 1 Sample Characteristics (N=70)**

Characteristics	n (%)
Non-Formal Education	
None	53 (75.7)
Islamic learning in mosque/from mass media	14 (20.0)
Islamic boarding school	3 (4.3)

Islamic caring model

The model of Islamic caring in this research is as follows (Figure 1). From the analysis of the structural model, it was found that the coefficient values showed that the nurse variable was the biggest direct factor in relation to Islamic caring (0.76). The significance of the nurse factor towards Islamic caring is stated by the value of t= 7.79. There was also a significant influence in relation to the service factor towards Islamic caring, as stated with t= 2.06. Meanwhile, with a value of 0.97, the patient factor has no significance towards Islamic caring. As with psycho-spiritual comfort, Islamic caring shows a significant influence with t= 2.85.

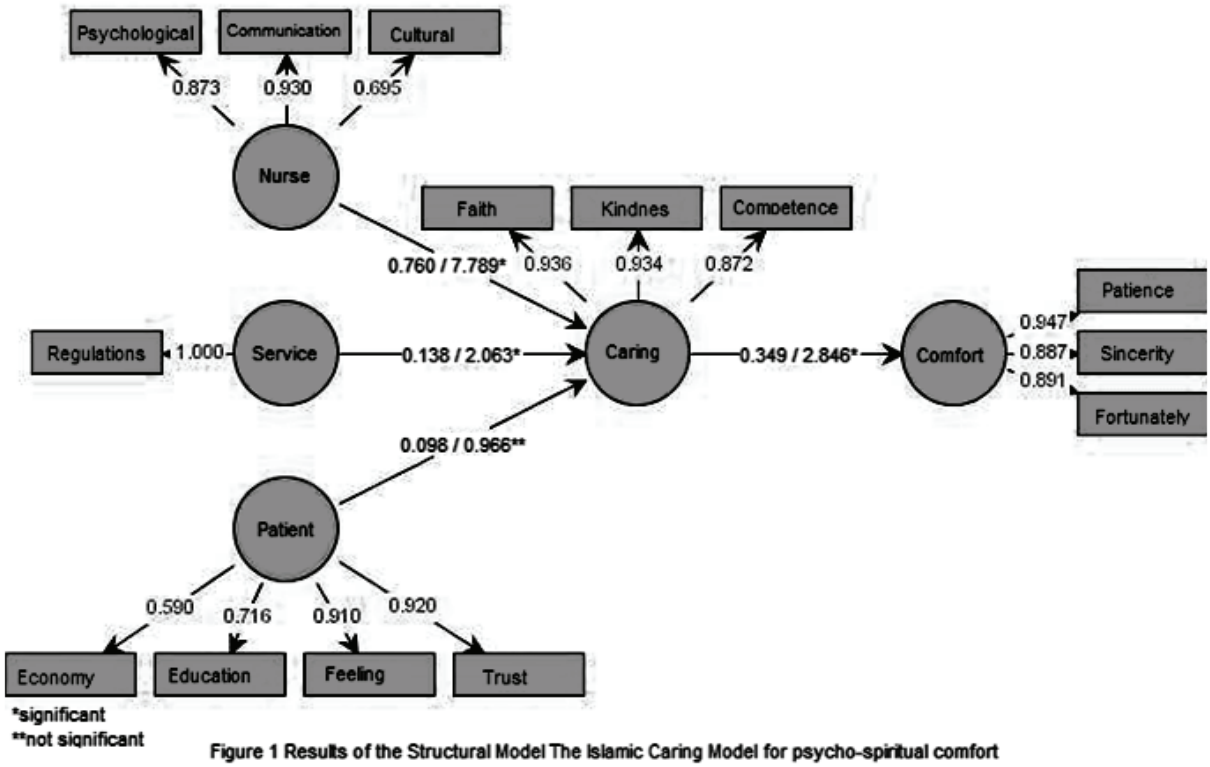

Figure 1 Results of the Structural Model The Islamic Caring Model for psycho-spiritual comfort

DISCUSSION

The Islamic Caring Model

The new finding of this research is that the Islamic caring model had a direct influence on the psycho-spiritual comfort of coronary disease patients. The Islamic caring model in this research is the development of Caroline Care Model's emphasis on Islamic values that character of maintaining belief, compassion, and competence. Psycho-spiritual comfort based on Kolcaba's theory that is modified by using Islamic values has the characteristics of patience, sincerity, and fortunate [12]. Islamic caring is a guide for nurses that encourages them to maintain their faith and to be sincere, compassionate, and competent, based on the Holy Quran and Prophet Muhammad's sayings.

The results of the statistical test showed that a good Islamic caring would significantly associated with a nurse and the hospital service. The results of this research indicate that a nurse's attitude is influenced by their personal character [13]. The research results showed that the hospital service factor significantly influenced the

nurses' Islamic caring behaviors when performing their services. The service factor in this research could be used as an component for the spiritual service regulations. These results agree with the findings of other studies, in which mentioned that spiritual services should be integrated with the vision, missions, and regulations of the hospital [14].

The behavior of nurses in Islamic caring can improve the psycho-spiritual comfort of coronary heart patients and help patients to display patience, gratitude, and sincerity. The results of this research are in accordance with the theory that says that well-being in an Islamic way is a condition full of being thankful for God's grace in the physical, spiritual, and social aspects of life [15]. Well-being full of thankfulness means that when someone has recovered fully from an illness, he or she has to be thankful and then go on to do good deeds. If they have already recovered but there are still remaining symptoms or disabilities, then he or she is still required to be patient and to surrender to God's will. If the illness is very serious or if there is no chance for recovery, he or she is obligated to be patient and to trust that God's plan is the best for him or her [16]. Patience, gratitude, and sincere characteristics of patients need to be improved by increasing the patient's religious knowledge. This situation is in accordance with research that mentions the spiritual can be improved by increasing religious knowledge [2]. Patience can also be demonstrated by believing that everything that happens is the destiny of God set in us. A Muslim must be sure that whatever happens to nurse has an element of goodness. Sincerity for the patient means their efforts in pursuing treatment merely seeks the pleasure of Allah and purifies the deeds relating to all pleasures of the world [17]. The sincerity of the patient includes all actions and sincere words that show he or she only wishes to please Allah.

The patient's psycho-spiritual comfort is judged by gratitude for the conditions or experienced and is shown by practicing and exercising God's command. This clause explains that the painful ordeal that affects the patient is merely a sign of God's love and affection for God creature. Patients should be grateful to God for every blessing in daily life [18].

Islamic Caring Components

Islamic caring behavior has the characteristic of maintaining faith in Islam, which can also mean excellence or perfection in worshipping. Being excellent for the nurse means that they have to maintain their intention to work sincerely. Sincerity is a strong character and does not recognize exhaustion (being consistent) [17]. The description of the theory shows that sincerity is the basic belief on which to build caring behavior of Islamic nurses. If the nurse develops sincerity, it makes the nurse's work easier. Sincerity as a skill creates the deepest and objectively measurable heartfelt interactions [18]. The sincerity character of nurses comes from all habits and actions. Nurses action comes from their mind that drives from themselves feelings. The explanation suggests that maintaining the belief (sincerity) that characterizes the nurse can be recognized as Islamic caring (Table 2). Islamic caring is evidence of the sincerity of a nurse that can be objectively measured.

Table 2 The Islamic Caring Components

No.	components	$\left(\frac{(\bar{X} - Min)}{(Mak - Min)}\right)$ X 100%	Criteria
1.	**Maintaining faith (sincerity)**		
	a Patience	87,8%	Good
	b Gratitude	81,1%	Good
	c Consistency	78,9%	Good
2.	**Compassion**		
	a Wise	76,7%	Good
	b Prioritize other people	80%	Good
	c Beneficial	70%	Enough
	d Well-mannered	81,1%	Good
3.	**Competence**		
	a Trustworthiness	90%	Good
	b Critical thinking	93,3%	Good
	c Punctuality	86,7%	Good
	d Independence	87,8%	Good

The concept of maintaining faith (sincerity) in Islamic caring behaviors during nursing activities requires patience, thankfulness, and consistency. Patience means a nurse should not easily get angry or despairing [19]. Forbearance is very appropriate behavior for nurses to display so that they are able to face and accept any expression of positive and negative feelings from patients. In the meantime, gratitude means placing something according to its function, according to God's will [18]. This situation emphasizes that nurses should always be grateful for work because of the many blessings God has always given to nurses. Thanksgiving can mean the attitude of taking care of and utilizing the best of the grace and gift of God in a good way and for a good purpose [20]. Consistency means that the nurse is steadfast or constantly doing good according to religion [17]. Gratitude and consistency are very much in line with the behavior of nurses who can be a support for spiritual strength and unlock the patient's spiritual dimension.

The concept of compassion in Islamic caring behaviors during nursing activities requires wise, prioritize other people, beneficial, and well-mannered. The Compassion In Islam, affection is known as *Mahabbah*. Therefore, nurses should be affectionate in showing their caring behavior, which is strongly urged in Islam. Commendable attitudes for nurses include being well mannered, friendly, calm, clean, and maintaining confidentiality [16]. Wisdom means a nurse must be a wise person in providing nursing care [9]. Wise is very appropriate in the behavior of nurses to foster sensitivity to self and to others by thinking smartly and wisely to address problems. The behavior of nurses in prioritizing others is in line with increasing the feeling the nurse has to always put others ahead of him or her (altruistic). Well mannered means a nurse needs to be gentle, quietly spoken, and display behaviors that are compassionate, empowering, and helpful [19]. Hospital nurses at the research site display good behavior, which results in them being categories as good. Well mannered is very much in line with the behavior of the nurse in being able to establish a good relationship with the patient.

According to the test result, another forming component in the characteristics of Islamic caring is competence. Competence in Islam Mans expert/ expertise. The Islamic caring behavior of nurses in the variable of competence, or professionalism, showed a positive result [11]. Being professional in work means working in accordance with the principles of the discipline, being honest and responsible, willing to help, and co-operative [16]. It is considered that being professional means to work smartly and knowledgeably. Critical thinking, trustworthiness, punctuality, and independence are qualities that individual Indonesian nurses need to be maximally competent.

CONCLUSIONS

The Islamic caring model found is nurse's behavior that emphasizes Islamic value that includes the character of maintaining belief, compassion, and competence to enhance the psycho-spiritual comfort.

Conflict of Interest: We have no conflicts of interest to disclose

Source of Funding- Self

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DOI Numher: 10.5958/0976-5506.2018.01363.3

Influence of *Picture and Picture* Method against Moral Development of Children

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ABSTRACT

Misbehaviour phenomenon in elementary school children can be caused by lack of moral development of children. The number of children with negative moral behaviour increases year by year both in quantity and quality. Internal and external factors can be the main effects of inadequate moral development of children. The aim of this study is to explain the effect of *picture and picture* method against moral development of children aged 10-11 years. *Pre-experimental* research with *one-group pre-post* test. Population of the research consisted of 165 children in Tanah Kalikedinding IV Elementary School. Sampling was conducted by using purposive sampling technique (n=117 respondents). The independent variable is the picture and picture method, while the dependent variable is the moral development. Collecting samples using observatory sheet and analysis using *Wilcoxon Signed Rank Test* with significant level of α = 0,05. There was an increasing percentage from pre test and post test. *Picture and picture* method can be used as an alternative for developing children behaviour. For the future research, it is expected to use control group to examine which factors influence moral development of children.

Keywords : *picture and picture method, moral, development, children*

INTRODUCTION

According to Kohlberg's belief empirically proved that Individuals with low moral level will tend to commit violence or crime more often compared to individuals with high moral level[(1).] Based on data of Child Protection Commission (Komisi Perlindungan Anak), Child Protection Cluster 2011-2016 found that from 7,690 children facing child deviation cases, 1,881 children dealt with health related issues and NAPZA (drugs), and 2,345 children experienced educational problems such as brawls and *bullying*[(2)]. According to First Class Bureaucracy Surabaya, the number of children facing the law in Surabaya is increasing from year to year, by evidence that there were 500 children in 2016 who need assistance and not only the number of cases increased but also the quality of the cases more complicated[(3)].

Based on surveys conducted by researcher on Tanah Kalikedinding IV Elementary School Surabaya from 2017 with 47 students aged 10-11 years, there were 65,96% children taunting/scorning other fellow students, 63,83% children starting physical aggression (punching, kicking and fighting), 34,04% violating school regulations, 23,40% not respecting school environment such as littering or harming school stools/ walls and 14,89% taking fellow students goods without permission.

School-aged children are individuals of 6-12 years old in development character period through verbal reinforcement, exemplary and identification. These aspects can be obtained through education at school as development of attitude and good habit[(4)]. Children having poor mental, moral and ethical values will be easily influenced by three main factors of juvenile delinquency, i.e. media, technology and friends[(5)]. Children moral development is in line with development of cognitive aspect, meaning that the stage of cognitive

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development for children aged 7-11 years old is on operational concrete phase [6], i.e. children can understand rules from conversations resulting on a logical thinking pattern and operational mentality[7]

Moral education is important point for children to avoid bad influences from their social environment, leading them to posses good behaviour and to act rightly[8]. *Picture and picture* learning model is one of the active learning methods to create cooperation among students to solve problems[9]. This method is a cooperative method, children will learn to understand rules and get moral values on right or wrong as well as the reasons through observation of pictures. According to social-learning theory, learning mostly occurs through observation-control, which leads to *vicarious reinforcement* by formulating expectation of behavioural outcomes without self-directed action. At the end of social-learning process, children will be motivated to imitate or not to imitate the behaviour model he/she observed[10]. Therefore, Based on above description, this research aims to determine the effect of *picture and picture* method against moral development for children aged 10-11 years.

METHOD

The design used in this research was pre-experimental with *one-group pre post-test* approach. Population on this research was 165 student of Tanah Kalikedinding IV Elementary School Surabaya aged 10-11 years old. Sample size in this study as many as 117 children obtained from the calculation of sample size and sampling by using purposive sampling .The independent variable in this research was the picture and picture method while the dependent variable was the moral development. The instrument in this research used tools and materials in the form of images with phenomenon found in society.

Data collection in this research was done by observation for 3 days before intervention, then another intervention after 3 days of following intervention days, and the last observation after given intervention for 3 days prior from two following three days. Data analysis used in this research is Wilcoxon Signed Rank Test with significant level of $\alpha = 0,05$.

RESULTS

Based on the demographic data of respondents, the major Characteristics of respondents was 10 years old, the eldest and nearly equal between male and female. Senior high school last education, Fathers' occupations were private employee and Mothers were Housewives.

Moral Development of Children before and after intervention

Distribution of children moral development prior to intervention of picture and picture method showed on table 1.

Table 1 Children Moral Development towards Prior Intervention

Moral Development		Good	Adequate	Less	Total
Sex	Boys	24 (40,7%)	31 (52,5%)	4 (6,8%)	59
	Girls	26 (44,8%)	30 (51,7%)	2 (3,5%)	58
Status in the Family Order	Single/Only Child	6 (54,5%)	4 (36,4%)	1 (9,1%)	11
	Eldest Child	18 (40,9%)	23 (52,3%)	3 (6,8%)	44
	Middle Child	11 (37,9%)	17 (58,6%)	1 (3,5%)	29
	Youngest Child	15 (45,5%)	17 (51,5%)	1 (3%)	33
Mother Working Status	Working	10 (41,7%)	13 (54,2%)	1 (4,1%)	24
	Unemployed	40 (43%)	48 (51,6%)	5 (5,4%)	93

The influence of picture and picture method on moral development of children as in Table 2.

There is an increasing trend from both pre-test and post test results. Increase based on the characteristics of the moral values of children, from which initially from average characteristic to become children with good moral characteristic. Based on statistical test results from Wilcoxon Sign Rank Test shows the results p = 0,000 <α, which means there is influence from *picture and picture* method towards moral development of children aged 10-11 years.

Table 2 Moral development of children before and after intervention

Moral development		**Before**		**After**	
		Freq	**%**	**Freq**	**%**
Category	Good	50	43	74	63
	Adequate	61	52	43	37
	Less	6	5	0	0
	Total	117	100	117	100
Mean		38.60		42.63	
Median		39.00		43.00	
Standard Deviasion		6.91		7.00	
Positive Ranks		85			
Negative Ranks		6			
Ties		26			
Z		- 7.657			
Wilcoxon Signed Rank Test p		0.000			

Table 3 showed that children of male gender have more moral values in the sufficient category. Girls have better category moral values than boys. Based on the order of the child in the family and the status of working mother and not working have moral development in adequate category.

Table 3. Characteristic of Moral Development

Moral value	**Before**		**After**	
	Average	**Category**	**Average**	**Category**
Honest	1,66	Less	2,95	Adequate
Discipline	3,22	Good	3,33	Good
Responsibility	2,97	Adequate	3,13	Good
Politeness	2,9	Adequate	3,17	Good
Caring	3,04	Good	3,18	Good
Confidence	2,47	Adequate	2,73	Adequate
Average total	2,71	Adequate	3,08	Good

DISCUSSION

Based on research of moral development towards children aged 10-11 years in Tanah Kalikedinding IV Elementary School Surabaya, before the intervention found that more than a half have adequate moral, while less than a half have good moral and there is a small part of child whom had less moral. This data shows

that less and adequate moral value children still cheat very often during test/*post test* learning process, do not pay attention to the teacher during lessons, disturbing fellow friends, not dare to express opinions, etc. This corresponds to individuals who have low morals will more often commit violation or indications of crime than individuals with high moral[1]. Children with better moral values tends to be more independent and able to sort out the positive and negative vibes/values[11].

Before the intervention, the moral characteristic of the average child is in adequate category. Moral values of honesty, responsibility, politeness and self-confidence are not only influenced by external factors, but also influenced by his/her own choice such as how these children resist the temptation when dealing in a particular situation. There are 2 processes of moral behavior in children, the basic process includes the process of reinforcement, punishment and imitation that can give an individual a way to learn about a particular response and why individual responses are different from the other; and self-control and able to resist temptation by developing self-control ability to avoid stealing, cheating, and lying[12].

The majority of children who have less and adequate moral value is the boys. This is consistent with the results of the study that boys are more difficult to regulate than girls[13]. Boys tend to be more competitive, conflict-prone, egoist, risk-taker, and seek for dominance compared with girls[14]. Based on observations in the field, boys tend to pay less attention to teacher, more difficult to manage and more often annoy their friends than girls.

Level of Children moral development found that the sequence (order) of children in the family does not affect the moral development of children in particular. Whether he/she is the only child, eldest, middle or youngest child does not show any dominating characteristics in child moral development[13]. Each child has a positive and negative character, which is the eldest son has high motivation, tend to talkative and super conscientious, middle child tend to be kind and friendly but unwillingly attached, and when the eldest child has more cheerful, sociable but very sensitive trait, the only child is very dependable but irritable and less forgiving[15].

Based of working parental status whether the mothers work or not, indicated that there is no positive influence on the moral development of children. It is been proven that children with both working or not working mothers do not show any significant results in forming/teaching the moral development of children into good, enough or less categories. Factors that can affect moral development is the role of the family in providing examples and a good moral understanding for the child him/herself. Role of the family is important in the development of moral values through the behavior of people in the house, the punishment given (to the children) when doing bad things, and the role of the family in giving understanding and example of good and bad deeds[16].

Moral development after the intervention mostly shows good improvement. This improvement can be proven by children's behavior, such as not cheating during the test/post test learning, pay attention to the teacher during class, not disturbing friends, dare/able to express opinions, etc. Children whom experienced increase in moral development are mostly active children during the process of *picture and picture* methods intervention. According to social learning theory, there are four phases in social learning, which are the attention phase, the reminder phase, the motoric reproductive phase (producing observed behavior), and the last phase of motivation to perform such behavior or not[17]. When the child is active in this method, the child will be stimulated to observe the image provided by the researcher, then the process of thinking about good and bad morals occurs, and then there is guidance to him/herself to produce observed behavior, so there is a motivation to behave in a good way according to their moral values[21].

Not all children have increased in morality, but also there are small number of children whose moral values remain, and whose moral value decreased. This influenced by other factors, such as differences in ways of thinking about moral decisions and how they feel about morality. The activity level of the children in accepting this method is seen from their discussion activities in arranging the images provided by the researcher into logical sequence, in addition from that activity children also had to be active in order of responding to pictures arranged by other groups into logical sequence. Children aged 10-11 years are individuals with concrete operational thinking, i.e. the child develops anability to use logical thinking to solve concrete problems[12]. A greater consistency and generosity in elementary school children will arise when

there is mutual stimulation and acceptance of arguments among peers in addition to parental encouragement and advice[12]. Children will easily understand the importance of moral values when children able to discuss about their understanding with their peers rather than just listening lectures from teachers or parents.

The characteristics of moral values after intervention, is increasing, the average of children into good category. This increasing obtained because interaction of children in obey the rules being made, process of thinking and understanding of children in taking moral values in the process of intervention when playing using this method. The benefits of playing is to play a moral value in children by learning right or wrong when interacting with their friends and understanding the rules defined in the game[18]. Game is part of the process of child growth, and important to manage it as a means of educating children effectively[19].

The most significant improvement based on the characteristics of moral values is the value of honesty and caring. Those values have consequences to the child's belief in his religion. Religious values teachs acceptable and proper thing to done and become a 'controller' for not doing something based on his/her likes or desires[16]. The most increase in the value of honesty and care is the consequences of religion such as getting a sin when lying or not care about others, so the children will tend to do good deeds that are considered good according to his/her religion.

Picture and picture method is one of the active learning media that can encourage cooperation among students in solving the problem[9]. This learning method has an active, innovative, creative, and fun character[20]. *Picture and picture* method is a good play method to be applied in improving moral development of children aged 10-11 years because it suits to the child's thinking level, so there is a good process to improve the moral development of children. Based on the description above shows that there was influence from *picture and picture* method towards moral development of children aged 10-11 years.

CONCLUSION

The children moral development children aged 10-11 years prior from the intervention of *picture and picture* shows that more than half children had enough moral development and a small part from population had less moral development, and after the *picture and picture* intervention shows an increase for most children towards better moral development. The best moral value increase is the value of honesty and care, because children tend to do good behavior according to his/her religion. The *picture and picture* method can provide self-coaching to the child through 4 phases, which is the attention phase, the reminder phase, the motoric reproduction phase, and the motivation to perform phase such behavior or not.

Ethical Clearance: This research has earned ethic certificate with ethic number of 442 from Faculty of Nursing Universitas Airlangga.

Conflic of Interest: We declare that we have no conflict of interest

Source of Funding: None

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DOI Numher: 10.5958/0976-5506.2018.01364.5

The Awareness of the Effect of Black Seeds on Blood Glucose in Private University

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ABSTRACT

It has been known that *Nigella sativa* has various pharmacological activities and one of it are as an anti-diabetic effect. This study aimed to assess the level of awareness in different genders regarding *Nigella sativa* on blood glucose among the university students. This study designed as a cross-sectional study. The self-administered questionnaire was given to respondents which asked about sociodemographic factors, health concerns and awareness regarding *Nigella sativa* and blood glucose. Majority of the respondents were aware about *Nigella sativa* (63%) and also received diabetes education before this (67.8%). There was a significant difference between genders regarding the awareness of *Nigella sativa* (p-value<0.05). Meanwhile, there was no significant association between genders and the awareness of *diabetes mellitus* (p-value>0.05). Most of the respondents believed that *Nigella sativa* is a home remedy (60.3%) and can reduce the mortality and morbidity of chronic disease (73.8%). Moreover, only (30.5%) of the respondents knew that *Nigella sativa* works as an anti-diabetic. However, rate of understanding about *diabetes mellitus* is fair (51.1%) and they unable to record their blood sugar level for safe keeping (16.2%). In addition, most respondents believed that diabetes is a serious illness (84.7%) and majority thought that by controlling food intake would overcome diabetes (65.1%) rather than medication (18.2%) or exercise (16.7%). In conclusion, there is a need to increase the awareness regarding Nigella sativa through campaigns and mass media. This would help them to have better knowledge and benefits about *Nigella sativa* especially as an anti-diabetic supplement.

Keywords*: Nigella sativa, blood glucose, diabetes mellitus, awareness*

INTRODUCTION

Nigella sativa is an annual herb that belongs to the family Ranunculaceae and they are commonly known as black seed and the usage of this Nigella sativa have been used for almost thousands of years regardless as a spice, food preservative and medicinal herbs to protect several disorders[1]. They are widely found in the Mediterranean area and some other regions in the world which are known by many names such as in Arabic countries called as habit-ulsauda or commonly known as black cumin or black seed[2].

For the last two decades, many studies have been conducted on the effect of *Nigella sativa* towards various body systems[3]. It has been revealed that *Nigella sativa* has various pharmacological activities including anti-diabetic, anti-hypertensive, anti-inflammatory and antimicrobial activities. A lot of these activities have

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been revealed due to the presence of Thymoquinone[4]. It has been reported that *Nigella sativa* had not been always looked up to as a part of alternative medicine or it has always been overlooked by a lot of people including the health care provider[5]. Traditionally, *Nigella sativa* has not been well understood of its uses and what could they do.

For the past few years, it has been known that the chronic and incurable diseases, such as diabetes, hypertension and cancer has led to the demand of uses of complementary alternative medicine. The National Centre for Complementary and Alternative Medicine defined it as group of medicinal products that have not been considered as a part of modern medicine[6].

In a nutshell, the importance of this study is to validate the awareness of *Nigella sativa* or also known as black seed on blood glucose among university students. This research was done to highlight on the benefits of *Nigella sativa* itself that could benefits a person's health. Also, to identify the level of awareness of Nigella sativa on blood glucose and relationship between the level of awareness in gender among university students by giving out questionnaires. There are tons of privileges of taking this seed as a supplement which could promote our health and reduce the risk of getting diabetes mellitus by reducing the blood sugar levels.

MATERIALS AND METHOD

Study design and source population

A quantitative cross-sectional study was conducted among 413 students in private university from July 2017 until December 2017. Simple randome sampling method was use for selecting our participants. Based on the simple formula for single population studies[5] the sample size was calculated using 95% confidence limit and 0.05 as a level of significant. Thus, the sample size calculated was 413 subjects and 20% as additional sample was added to make the total of 413 respondents.

Research tool of data collection

A self-administered questionnaire was used to collect the data. The questionnaire was constructed by referring to the previous related research. It was validated by using content and expert validation from different universities. Pre-test was used also before conducting the study to ensure all questions were understandable and editing the unclear questions. The questionnaire consists of three categories: 7 demographic factors, 7 regards awareness regarding Nigella sativa, and 11 medical health information regarding diabetes mellitus items. The questionnaire comprises of close-ended questions. English was the language used in the questionnaire to collect the data.

Ethical consideration

Questionnaire was distributed among the students from different batches in the university after the approval of the study proposal from the Research Committee at Management and Science University (MSU). Privacy and confidentiality were taken to the participant's information. Participants were given a briefing back ground before the questionnaires distribution. Voluntarily without any oppression the informed consent was taken directly from the students by filled the consent form then collected data were obtained by answering a self-administered questionnaire.

RESULTS

Socio-Demographic of the Study Population

A total of 413 respondents were participated in this survey. Table 1showed that the majority of our participants were male (50.1%), aged between 21-23 years old (54.2%), Malay (65.9%), single (82.8%) and degree students (79.2%).

Table 1: Demographic data results of the participants

Variable	Frequency	
	n	%
Gender		
Male	207	50.1
Female	206	49.9
Age		
18-20	122	29.5
21-23	224	54.2
24-26	60	14.5
27-29	5	1.2
30>	2	0.5
Race		
Malay	272	65.9
Indian	98	23.7

Cont.... **Table 1: Demographic data results of the participants**

Chinese	23	5.6
Others	20	4.8
Marital status		
Single	342	82.8
In a relationship	65	15.7
Married	6	1.5
Level of education		
Foundation	15	3.6
Diploma	70	16.9
Degree	327	79.2
Masters	1	0.2
Total	413	100

Level of awareness regarding Nigella sativa on blood glucose

Based on the result that has been tabulated in Table 2, it was demonstrated that the level of awareness regarding Nigella sativa on blood glucose among the students was only at the average level (49.6%) representing all socio-demographic data and only (30.0%) of the respondents has a good level of awareness of Nigella sativa on blood glucose.

Table 2: Level of awareness regarding Nigella sativa on blood glucose

Scoring	**n**	**%**
Good	124	30.0
Average	205	49.6
Poor	84	20.3

Level of awareness regarding Nigella sativa on blood glucose in gender among the students

Chi square test was done to analysis the relationship between awareness and gender as shown in table 3. It was revealed that the association between gender and the awareness level was statistically significant (P= 0.001).

Table 3: Socio-Demographic data associated with awareness of Nigella sativa on blood glucose

Independent variable	**Good**		**Average**		**Poor**		**p-value**
	n	**%**	**n**	**%**	**n**	**%**	
Gender							
Male	46	22.2	108	52.2	53	25.6	0.001
Female	78	37.9	97	47.1	31	15.1	

Comparison between awareness regards Nigella sativa with gender among the students

Based on the finding from table 4, descriptive analysis was performed for male and female in each variable included in this part by using frequency and percentage. Chi square test was performed between gender and the included variables related to the awareness. It was demonstrated that the difference between male and female in regards of heard about Nigella sativa, Nigella sativa a home remedy or medication, thoughts on people who consume Nigella sativa were statistically significant (P = 0.001, P= 0.002, P= 0.024) respectively. On the other hand, and consume Nigella sativa showed no significant difference statistically between male and female (P= 0.225, P= 0.314, P= 0.133) respectively.

Table 4: awareness regards of Nigella sativa with gender

Statements	**Demographic**				**P-value**
	Male		**Female**		
	n	**%**	**n**	**%**	
Heard about Nigella sativa					0.001
Yes	113	54.59	147	71.36	
No	94	45.41	59	28.64	
Consume Nigella sativa					0.225
Yes	73	35.27	85	41.26	
No	134	64.73	121	58.73	
Nigella sativa a home remedy or medication					0.002
Home remedy	109	52.65	140	67.96	
Medication	98	47.34	66	32.04	

Cont...

Thoughts on people who consume Nigella sativa					0.024
Health purposes	158	76.33	176	85.44	
Own interest	49	23.67	30	14.56	

Comparison between prevalence of blood glucose with gender

Table 5 shows the frequency and percentage for male and female in the included variable in this comparison. The outcome (gender) and all variables in this part were analysed by using Chi square test. The association between gender andrate understanding of diabetes, the blood sugar, having high blood sugar reactions and family history was statistically significant ($P < 0.05$). On the other hand, difficulties in monitoring blood sugar, having low blood sugar reactions and opinion on how diabetes should be treated showed no significant association with gender ($P > 0.05$).

Table 5: Prevalence of blood glucose in gender

Statements	**Demographic**				**P-value**
	Male		**Female**		
	n	**%**	**n**	**%**	
Rate understanding of diabetes					0.038
Good	82	39.61	100	48.54	
Fair	112	54.11	99	48.06	
Poor	13	6.28	7	3.40	
Test blood sugar					0.002
Yes	106	51.21	137	66.50	
No	101	48.80	69	33.50	
Difficulties in monitoring blood sugar					0.248
Yes	42	20.29	32	15.53	
No	165	79.71	174	84.47	
Having low blood sugar reactions					0.346
Yes	42	20.29	50	24.27	
No	165	79.71	156	75.73	
Having high blood sugar reactions					0.033
Yes	14	6.76	27	13.11	
No	193	93.24	179	86.89	
Family history					0.013
Yes	98	47.34	112	54.37	
No	64	30.92	72	34.95	
Not sure	45	21.74	22	10.68	
Opinion on how diabetes should be treated					0.134
Medication	35	16.91	40	19.42	
Controlling food intake	131	63.29	138	66.99	
Exercise	41	19.81	28	13.59	

DISCUSSION

This study is to determine the level of awareness toward the *Nigella sativa and its effect* on blood glucose among the students. The medical practitioner has always failed to see *Nigella sativa* as a part of supplement that might help to improve a person's health[5].The level of awareness of the privet university students regarding Nigella sativa was at high scoring level. This was sustained based on the previous study stating that the awareness of Nigella sativa or best to be known as complementary medicine is at high level (71%) same goes to its prevalence (67%) among their participants[6].

In addition to this, there was also a significant difference between the levels of awareness of *Nigella sativa* on blood glucose in gender among the private university students. These results are in conformity with the finding of previous studies stating that there is a significant difference between gender[7]. While the current study are in contrast with the recent result, who reported that there is no statistical significant difference involving awareness regarding *Nigella sativa* on blood glucose between male and females ($p < 0.295$)[8]. This insignificance was maybe due to the respondents chosen among medical students. Therefore, they might have a good awareness on *Nigella sativa* on blood glucose between the genders.

After doing this research, we can also say that in this 21st century, people have been searching for alternative medicine too to treat their illnesses. It has been proven based on previous study, these types of alternative medicine or such herbs like *Nigella sativa* has always been used either for medicinal purposes, supplements or as a spice in their cooking[9]. From what can we observe is that, overall, female has a better awareness regarding *Nigella sativa* compare to male. This has been proven by previous study, stating that, female has a better knowledge in regards to complementary medicine[10].

Proven by previous study stating that *Nigella sativa* has various pharmacological effects due to the presence of thymoquinone[11]. One of the most significant pharmacological effects for *Nigella sativa* is anti-diabetic[12]. *Nigella sativa* has been proved to reduce the blood sugar level is by the presence of essential oil along with the presence of thymoquinone[13]. On top of that, treatment with *Nigella sativa's* extract alongside with the presence of thymoquinone had proven to reduce the glucose serum levels and increase the insulin tissue in rats[14]. This might prove that Nigella sativa can be use clinically to treat diabetes for the protection of beta cells against oxidative stress[15].

CONCLUSION

From this study, it can be concluded that, the respondents of this study had successfully shows an adequate level of awareness regarding *Nigella sativa* on blood glucose. There was a positive level of awareness of *Nigella sativa* on blood glucose in the privet university students. Therefore, the null hypothesis is rejected. However, there is a significant difference between genders on the level of awareness regarding Nigella sativa on blood glucose ($p < 0.05$). Hence, the null hypothesis is also rejected.

LIMITATION

There are a few limitations to this study that should be highlighted on which may affect the findings. To begin with, the survey was confined to only the privet university students due to the limited time that was given to conduct this research. Moreover, failure to give out the survey other than the privet university students is because of long processes and many authorities approvals.

RECOMMENDATION

Further strategies needed to be considered to increase the level of awareness of *Nigella sativa* on blood glucose is first and foremost, conducting a campaign to raise awareness are one of the few steps that can be as an eye-opener to the world. Other than that, using media mass as a medium to spread the awareness since it is one of the influenced mass nowadays to help them to have a better knowledge and benefits abut Nigella sativa as an anti-diabetic supplement

Conflict-of-Interest: All authors have declared no conflict-of-interest.

Research Fund: This research is self-finding.

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DOI Numher: 10.5958/0976-5506.2018.01364.5

The Correlation between the Quality of Nursing Work Life and Job Performance

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ABSTRACT

Introduction: Nurses are one of the most important health workers who contribute to determining the quality of health services. Giving more attention to their condition and needs will increase their loyalty to the nursing profession, which will lead to a positive impact on their work performance. Therefore, this study aimed to analyse the correlation between the individual factors and the nurse's performance, and also to see if there was a correlation between QNWL and the nurse's performance. **Method:** The design of the study was a correlational research study with a cross-sectional approach. The sample consisted of 106 nurses, collected by simple random sampling. The independent variables were individual factors (education and length of work), and QNWL. The dependent variable was job performance. The data was collected by using questionnaires analysed using multiple linear regression with ($p<0,05$) degree of significance. **Result and Analysis**: The results showed that there was a correlation between education and the nurses' performance ($p=0,035$), and also a correlation between QNWL and nurses' performance ($p=0,000$). The length of time they'd been working was not influenced by the nurses' performance ($p=0,103$). **Discussion:** The individual factors of education and QNWL had an impact on the nurses' performance. It is suggested for the next researcher to analyse other significance factors that influence QNWL.

Keywords: *Nurses, Job Performance, Individual factors, Education, Length of work, QNWL*

INTRODUCTION

A hospital is an institution which provides health services through promotive, preventive, curative and rehabilitative efforts[1]. Health care facilities in hospitals can run in line with the quality of health care which is given by the health workers in the hospital.

Health care quality or employee performance is influenced by several factors, namely individual, organizational, and work factors themselves. Individual factors include ability, knowledge, education, length of work, skills, motivation, and norms. Organizational factors consist of rewards, training, vision, mission, and leadership models in work[2]. Nursing services as an integral part of health services have a very large contribution in determining the quality of care in hospitals[3]. Work atmosphere, unfavorable work environment, and heavy workload can hinder the professional service process within the hospital. Concern for the condition of the nurse, fostering the loyalty of nurses to provide better service[4].

Low salary and a heavy workload will cause nurses to experience work fatigue, decreased motivation, decreased willingness, and create a poor quality nursing work life[5] (QNWL). QNWL is a significant element which is owned by the nurse, and it can affect the healthcare quality that is given to the patients[6].

Research related to QNWL is important to determine the quality of work life of nurses in every hospital[7]. Different hospitals with different organizational systems and environments will produce different QNWL for each employee[8]. This difference can be related to the state of the unit, the number and type of units, policies,

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and environment in each unit[9].

There is still limited only a number of research studies related to the relationship between the quality of nursing work life and the nurse's work performance. The objective of this research was to find out the relationship of the individual factors of education and length of work toward the nurse's work performance, as well as the relationship between QNWL and the nurse's work performance.

METHOD

This study was a correlational research study conducted using a cross sectional approach which involved nurses as the respondents. The sample of this research was made up of hospital nurses, totalling 106 respondents. The inclusive criterion was that the nurses had been working for a minimum of three years. The independent variables used in this research were individual factors, namely education, length of work, and QNWL. The dependent variable employed was work performance.

The data was collected using a questionnaire. The QNWL questionnaire was the questionnaire developed by Brooks and Anderson[10] which was then adapted from a previous study by Prihastuty[11]. The data analysis was done by a descriptive test and multiple linear regression.

RESULT

The respondents of this research were mostly aged between 20-30 years old, of whom (89 people) were female (84%). The respondents' working times were almost in balance, in which 52 people had a 3-5 years working period (49.1%) and 54 others had a working period of more than 5 years. Employment status was dominated by contract employee, with 56 people (52.8%). Most of the respondents were included in the good category for all 4 aspects of QNWL. In the aspect of work design, which defined work satisfaction, autonomy, work proportion, performance and staffing, most of them had a fair assessment result (Table 1).

Table 1. Quality of nursing work life

No	Variable	Frequency	Percentage (%)
	Work life-home life		
	Good	70	66,0
	Fair	28	26,4
	Poor	8	7,5
	Total		100
	Work design		
	Good	46	43,3
	Fair	57	53,8
	Poor	3	2,8
	Total	106	100
	Work context		
	Good	87	82,1
	Fair	18	17,0
	Poor	1	0,9
	Total	106	100
	Work world		
	Good	71	67,0
	Fair	15	14,2
	Poor	20	18,9
	Total	106	100
	QNWL		
	Good	33	31,1
	Fair	56	52,8
	Poor	17	16,0
	Total	106	100

This research study showed that most of the respondent's demonstrated good work performance in all of the components related to their nursing care documentation. This included an assessment of their work performance as well as the total score of the work performance assessment (Table 2).

Table 2. Work Performance

No	Variable	Frequency	Percentage (%)
	Assessment		
	Good	57	53,8
	Fair	21	19,8
	Poor	28	26,4
	Total	106	100
	Diagnosis		
	Good	62	58,8
	Fair	30	28,3
	Poor	14	13,2
	Total	106	100
	Intervention		
	Good	76	71,7
	Fair	20	18,9
	Poor	10	9,4
	Total	106	100
	Implementation		
	Good	77	72,6
	Fair	28	26,4
	Poor	1	0,9
	Total	106	100
	Evaluation		
	Good	58	54,7
	Fair	29	27,4
	Poor	19	17,9
	Total	106	100
	Documentation		
	Good	78	73,6
	Fair	28	26,4
	Poor	0	0
	Total	106	100
	Work Performance		
	Good	44	41,5
	Fair	43	40,6
	Poor	19	17,9
	Total	106	100%

Table 3 shows that level of education had a significant influence on the nurse's work performance. The table explains that D3 nurses tend to have good and sufficient performance appraisal categories, while most nurses with S.Kep. Ns education background have sufficient performance assessment categories.

Table 3. The relationship of the individual factors: education and work performance

Education	Work Performance						Total	
	Good		Fair		Poor			
	f	%	f	%	f	%	f	%
D3	22	20,8	21	19,8	8	7,5	51	48,1
S.Kep	3	2,8	0	0	5	4,7	8	7,5
S.Kep., Ns	19	17,9	22	20,8	6	5,7	47	44,3

The data above in Table 4 shows that length of work did not have a significant influence on the work performance of the nurses. Nurses with <5 years of work experience have good performance appraisals while nurses who have worked> 5 years mostly have sufficient performance assessments.

Table 4. The relationship of the individual factors: length of work and work performance.

Length of work	Work Performance			Total
	Good (%)	Fair (%)	Poor (%)	
3-5 years	23 (21,7)	19 (17,9)	10 (9,4)	52 (49,1)
>5 years	21 (19,8)	24 (22,6)	9 (8,5)	54 (50,9)

Overall the performance of nurses was in the sufficient category with a sufficient QNWL assessment of 41 nurses (38.7%) (Table 5).

Table 5. The Relationship of QNWL and Work Performance

QNWL	Work Performance						Total (%)	
	Good (%)		Fair (%)		Poor (%)			
Work life/home life								
Good	43	40,6	26	24,5	1	0,9	70	66,0
Fair	1	0,9	12	11,3	15	14,2	28	26,4
Poor	0	0,0	5	4,7	3	2,8	8	7,5
Work design								
Good	21	19,8	14	13,2	11	10,4	46	43,4
Fair	23	21,7	27	25,5	7	6,6	57	53,8
Poor	0	0,0	2	1,9	1	0,9	3	2,8
Work context								
Good	44	41,5	40	37,7	3	2,8	87	82,1
Fair	0	0,0	3	2,8	15	14,2	18	17,0
Poor	0	0,0	0	0,0	1	0,9	1	0,9
Work world								
Good	37	34,9	31	29,2	3	2,8	71	67,0
Fair	7	6,6	6	5,7	2	1,9	15	14,2
Poor	0	0,0	6	5,7	14	13,2	20	18,9
QNWL								
Good	31	29,2	2	1,9	0	0,0	33	31,1
Fair	13	12,3	41	38,7	2	1,9	56	52,8
Poor	0	0,0	0	0,0	17	16,0	17	16,0

Nurse performance is significantly influenced by individual factors, namely education with a determination coefficient value of 26.4% with a significance value of 0.035. QNWL has a significant influence on the performance of nurses both individually and simultaneously. The dimensions of home and work life and work context have a significance level of 0,000. Job design has a value of 0.001 while the work life with a value of 0.021 (table 6).

Table 6. The Summary of the Multiple Linear Regression Analysis on the Relationship of Nursing Work Life Quality and the Nurses' Work Performance

No	Hypothesis	R	B	sig.	Note
	Relationship of individual factors: education and work performance	0,264	5,817	0,035	Significant
	Relationship of individual factors: length of work and work performance	0,264	8,598	0,103	Insignificant
	Relationship of work life/home life and work performance	0,813	0,518	0,000	Significant
	Relationship of work design and work performance	0,813	0,287	0,001	Significant
	Relationship of work context and work performance	0,813	0,705	0,000	Significant
	Relationship of work world and work performance	0,813	0,180	0,021	Significant
	Relationship of QNWL and work performance	0,813	-	0,000	Significant

DISCUSSION

The good results from the assessment of work performance based on the nursing care documentation available was mostly weighted toward the nurses with Diploma degree (*D3)*. However, the poor results were also shown by the nurses with the same educational background. The nurses with a *ners* educational background tended to have a fair assessment score of work performance. Therefore, the relationship between level of education and work performance was insignificant.

The previous theory[12] stated that the background of the nurse's education had a significant influence on the work performance of the nurses. The higher the education level, the higher the thinking ability, logic, critical skills and systematic work methods. A research study with similar results has been previously conducted[13], and the research showed that level of education influenced the nurses' work performance while conducting their nursing care. The results were in line with Gibson's theory drawn up in 1997 and Trihastuti's research in 2016.

The theory developed by Gibson[12] explained that an individual which has been working in an organisation for a long time will have more experience, so then their work performance will be better. This was different from Prihastuty,[11] who said that a new nurse tends to have high motivation and expectations related to the working environment, which provides a good level of influence on their work performance. A newly working nurse shows high motivation and enthusiasm related to their profession.

The nurses' length of work in this research study showed an insignificant result. The work performance in this study used the nursing care documentation assessment. New nurses had high motivation and idealism related to nursing care. They obeyed and followed every room procedure in an effort to adapt themselves.

The quality of home and work life in this research covered the aspect of balance between their home and work, their remaining energy, and the policies in place in the organisation[4]. Nurses with the ability to balance their quality of work/home life have the ability to divide their time[14]. The feeling of being protected and going in the right direction would have a positive impact. The leadership, which was fully not authoritarian, was built with democracy and kinship and created good work performance in the nurses[15].

Work design has several aspects involved, namely work satisfaction, autonomy and work proportion, as well as staffing at work[10]. The excessiveness of the nurses' work load will affect the nursing care that they give. The work performance based on the nursing care given to their patients becomes less optimum[14]. Meanwhile, work context explains about the effect of the working environment on the working nurses, which involves communication, supervision, cooperation, career development, and security at work. Work world, on the other hand, is the person's point of view about nursing, their image, and the usefulness value.

Most nurses in Syarifah Ambami hospital had a fair score in relation to the three aspects of QNWL, which were the balance between their home and work life, work design, and work life. The aspect of work context showed that the majority of the nurses had a fair score in the assessment as well.

The above tables explain that all four aspects in QNWL had a significant effect on the nurses' work performance. The *t* regression significantly showed 0.000 point in the aspect of *work life home life*, 0.001 point in *work design*, 0,000 point in *work context*, and 0.021 in *work world*. The overall *t* significantly showed $p<0,05$ point, which could be defined as the four aspects of QNWL working in line with the nurses' work performance. The better the QNWL aspects, the better their work performance as a result.

CONCLUSIONS

Findings can be used by nurse managers and decision makers to design and implement appropriate strategies to improve QNWL. Better QNWL is the key to attract and retain competent and motivated nurses and might lead to improve quality of nursing Services.

Ethical Clearance: The research passed the ethical test conducted at the Ethics Committee of the Faculty of Nursing Universitas Airlangga number 1029-KEPK.

Source of Funding: This study is self-funded research project.

Conflict of Interest: None.

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DOI Numher: 10.5958/0976-5506.2018.01365.7

Role of MRI in Comparison with DWI-MRI in Diagnosis of Intracranial Meningioma

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ABSTRACT

Objective: Meningiomas are the most common non-glial tumours of the central nervous system (CNS), accounting for between 16 and 20 % of all intracranial tumours. This study was set up to determine the role of diffusion weighted imaging and determination of apparent diffusion coefficient (ADC) values to differentiate typical meningiomas from atypical/malignant variety.

Methods: In this cross-sectional study, 40 patients aged 24–70 years with meningiomas were included. Using routine MRI sequences, the meningiomas were diagnosed and DW images were performed. Apparent diffusion coefficient (ADC) values were measured in the lesion, in the normal area of brain parenchyma analysis. $P < 0.05$ was considered significant.

Results: 27.5% in age group 40-49, 80% typical characteristics meningiomas, cerebral convexity location was found in (30%), the mean ADC of atypical/malignant meningiomas (0.61±0.09) was significantly lower compared with benign meningiomas (1.22 ± 0.1).

Conclusion: Typical meningiomas have higher ADC values than atypical cases. DW MRI may be of help in differentiating typical and atypical meningiomas.

Keywords: *MRI, DWI-MRI, Diagnosis, Meningioma, Tntracranial tumors.*

INTRODUCTION

Meningiomas are the most common non-glial tumours of the central nervous system (CNS), accounting for between 16 and 20 % of all intracranial tumours[1].

Meningiomas represent approximately15% of all symptomatic and roughly one third of all incidental (asymptomatic) intracranial neoplasms [2,3], with a higher incidence of up to 35.2% among Asians and Africans[4].

True meningiomas arise from meningothelial cells (arachnoid "cap" cells), and the tumors occur more frequently where these cells are most numerous[5].

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When symptomatic, meningiomas present with a wide variety of symptoms, arising from compression of adjacent structures, direct invasion of or reactive changes in the brain or due to obstruction of cerebrospinal fluid (CSF) pathways or vessels [6].

The majority of meningiomas are spontaneous and of unknown aetiology, although recognised risk factors include previous exposure to radiation, genetic disorders such as neurofibromatosis type 2, in which the tumours may be multiple, and after head injury, although the causality in the latter is unclear [7].

Meningiomas are typically slow-growing tumours that arise from the meningothelial cells of the arachnoid. Histological grading of meningiomas is based on the current WHO classification. The majority of lesions are benign WHO Grade I lesions, representing approximately 90% of cases. The histological subtypes of grade I meningiomas include meningothelial, psammomatous, secretory, fibroblastic, angiomatous, lymphoplasmacyte-

rich, transitional, metaplastic and microcystic. They differ from the more aggressive meningiomas, WHO grade II (atypical) and WHO grade III (anaplastic), 5–7% and 1–3% of cases respectively [6], in their number of mitoses, cellularity, nuclear-to-cytoplasmic ratio, histological patterns and their relatively low risk of recurrence or aggressive growth pattern [8].

Meningiomas may be found along any of the external surfaces of the brain as well as within the ventricular system where they arise from the stromal arachnoid cells of the choroid plexus[9]. The typical MRI signal intensity characteristics consist of isointensity to slight hypointensity relative to grey matter on the T1-weighted sequence and isointensity to slight hyperintensity relative to grey matter on the T2 sequence. After contrast administration, meningiomas typically demonstrate avid, homogeneous enhancement; however, they may occasionally have areas of central necrosis or calcification that do not enhance[10].

Meningiomas may uncommonly demonstrate an abnormal enhancement pattern post contrast administration. The enhancement may be heterogeneous secondary to the presence of intrinsic calcification, cysts and necrosis[11]. Ring enhancement may be seen in cases with central cyst formation, haemorrhage or necrosis[12] with the peripheral enhancement representing typical enhancement of the viable meningeal neoplasm. Diffusion tensor imaging (DTI) may aid in the distinction with several studies reporting a decreased apparent diffusion coefficient (ADC) in high-grade tumours[13]. Various theories have been proposed to explain the reduced ADC and include a decreased free diffusion of extracellular water and the high nuclear-tocytoplasmic ratio of high-grade tumours, resulting in a reduction in the free translation of intracellular water[13]. Because atypical and malignant meningiomas are more prone to recurrence and an aggressive growth pattern, DTI may provide useful diagnostic information for surgical planning and prognostication[14].

However, all primary benign tumor can be diagnosis by DWI[15]. The sensitivity of DWI for diagnosis of primary benign cystic brain tumor is 100% [16].

The objectives of our study were to evaluate the benefits of DW MRI method, and to investigate whether it is more advantageous in the distinction and differentiation of benign from malignant meningiomas on the basis of ADC values.

PATIENTS AND METHOD

In this cross-sectional study, forty patients (9 males and 31 females) with an age ranging from 24-70 years (mean 57 years) were studied at the surgical wards of Al-Hilla teaching Hospital, Babylon province, Iraq, between November 2017 and June 2018 with brain meningiomas.

A complete history was taken from each patient, data taken from files of patients, age sex residence and clinical presentation. presumptive diagnosis of intracranial extra-axial meningiomas was made using Philips Gyroscan (N.T. 3000 super-conducting, 1.5 Tesla).

DWI was done using a multislice single-shot echo-planar imaging sequence. Apparent diffusion coefficient (ADC)maps were automatically generated by the implemented software The slice with the largest diameter of meningioma was selected for ADC calculation. In this image. a polygonal region of interest (ROI) as large as possible was manually drawn on ADC maps around the margin of the lesion (whole lesion measurement) without risking partial volume effects. In all lesions, minimal ADC values (ADCmin) and mean ADC values (ADCmean) were estimated

The signal intensity of the meningiomas was assessed on the short- and long-TR images and the diffusion-weighted sequences. Signal intensity was judged as hypo intense, isointense, slightly hyper intense, or hyper intense to cortex, and enhancement patterns were marked as either homogeneous or heterogeneous. Typical meningiomas had homogeneous signal intensity similar to that of gray matter, intense homogeneous enhancement (no cystic/ necrotic/hemorrhagic foci), smooth and distinct margins, and no evidence of brain invasion.

STATISTICAL ANALYSIS

Data was collected and included in a data based system and analyzed by statistical package of social sciences (SPSS, Inc., Chicago, IL, USA) version 20. Parametric data were expressed as mean ± standard deviation (SD). It was analyzed statistically using student t-test while non-parametric data were expressed as percentages and were analyzed using chi square. $p < 0.05$ was considered statistically significant.

RESULTS

Forty patients were included in this study. These patients aged between 24-70 years with mean age 57 years, fifteen percent of them in age group 24-29 years 22.5% in age groups 30-39 years and 50-59 years for each group, 27.5% in age group 40-49 years and 12.5% in age group 60-70 years. Male to female ratio 1:3.4, 22.5% males,77.5% females. Solitary meningioma was presented in 92.5% and 7.5% multiple presentation.

The estimated ADC mean values of meningiomas (Meningiomas size) ranged from 0.41 to 1.78 $\times 10^{-3}$ mm^2 /s, with mean 0.97±0.21. Figure-1 illustrates presentation of meningiomas according to their types.

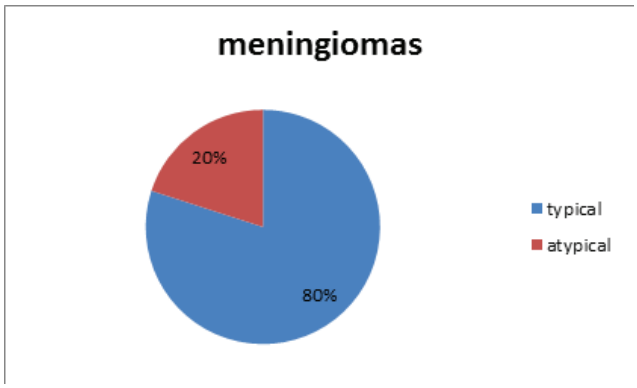

Figure 1: Presentation of meningiomas

In regard to the tumor location (Figure 2), cerebral convexity location was found in (30%), parasagittal in (25%), cerebellar convexity with (7.5%), sphenoid ridge location was seen in (10%), the tubercullum sellae was seen in (12.5%) and intraventricular location in 2 cases (5%), while the sub frontal and cerebellopontine angle (C.P.A.) locations shared the same number of cases (one for each) that represent (2.5%) of total cases of meningiomas.

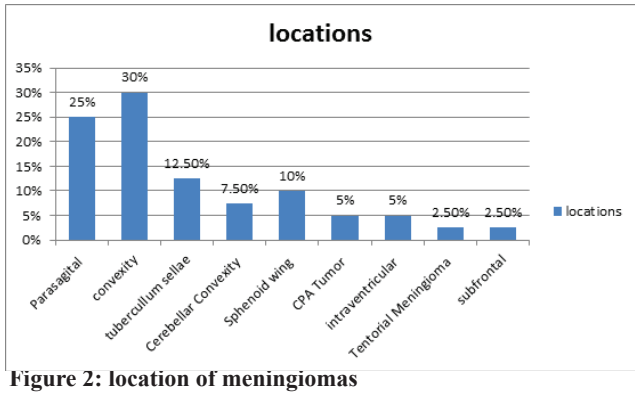

Figure 2: location of meningiomas

The mean ADC value of atypical meningiomas was 0.61 ± 0.09x 10 $^{-3}$ and the mean ADC value of typical meningiomas was 1.22 ± 0.11x 10 $^{-3}$. There was a statistically significant difference between the ADC values of typical and atypical meningiomas (P <0.001) (Table 1).

Table 1: The ADC range and ADC mean of meningiomas

	ADC range(10^{-3} mm^2/s)	**ADC mean (10^{-3} mm^2/s)±SD**	**p-value**
Typical	0.73-1.78	1.22 ± 0.11	0.001
Atypical	0.41-0.68	0.61±0.09	

Typical meningiomas was variable with 13 hypointense,10 isointense and 9 slightly hyperintense. While of eight atypical meningiomas, one was isointense, one slightly hyper-intense, and six were hyper-intense signal intensity (Table 2).

Table 2: Difference in intensity between types of meningiomas

		ADC map				
	hypointense	**isointense**	**Slightly hyper-intense**	**Hyper-intense**	**Total**	**p-value**
Typical	13	10	9	0	32	0.002
Atypical	0	1	1	6	8	
Total	10	13	10	7	40	

DISCUSSION

Diffusion-weighted MR imaging had been evaluated as a diagnostic technique in cases of brain neoplasms. DWI is the most important MRI technique that provides information on water diffusion to allow evaluation of the rate of microscopic water diffusion within tissues [17].

In our study we found female predominant, 77.5% female, 22.5% male, which is go with study of intra cranial meningioma by Isabelle [6], 80% of patients are female in adults, and in other study in workers found female predominant, 66% female, 34% male [18].

In our study found mean ADC value of meningiomas was 0.97 ± 0.21× 10−3 mm2s−1, Similar results were reported also in the study of Hakyemez et al. found in their analysis of 39 patients with meningioma that the mean ADC value 0.96± 0.22× 10−3 mm2s−1[(10)], while Filippi et al [(19)] found that the mean ADC value was 0.77± 0.29× 10−3 mm 2s−1.

There were 80% of meningiomas typical presentation and 20% atypical, in other thesis the typical meningioma about 88.7%, atypical meningioma about 11.3% [7], and Herz *et al.* the typical meningioma was 71%, atypical meningioma was 29% [20]. These difference could be according to examiner professional or to criteria used to differentiated between them.

In our study the most common location meningioma is in cerebral convexity and next common location is parasagital, and percent of intra ventricular meningioma about 5% which is consistence to results of other authors [21,22]. Other study had 1.6% of patient diagnosed as intra ventricular meningioma, other result of location approximately coincide to result of study by Watts et al[23].

Results of this study found that 55% of meningiomas arise in right side of brain and 30% in left side and 15% in central region. These results was in consistent with those obtained by Abdulsattar who found that 53% was in right side, 29% in left side, and 14.5% in central region[24].

In this study, 15% had bone involvement, which is resembling the result obtained by Bigner (15–20%)[25]. Other study reported 14.5% of bony involvement[26]. On the other hand, meningiomas calcification seen 12% only while other worker reported 33% [27].

On calculating the mean ADC values we found that the ADC values of atypical meningiomas (0.61±0.09) were significantly lower than those of typical meningiomas (1.22 ± 0.11) in p-value 0.001. Similar results have been noted by several authors [8,19,28].

The ADC values of atypical meningioma were lower than typical meningiomas, there are several possible explanations for this observed correlation. One factor is that malignant and atypical meningiomas have less extracellular water and space, which reduces the ADC value. This observation is expected if one considers that primary brain neoplasms, which have been diagnosis, show an increase in extracellular water and space due to cell lysis (less viable and less cellular tumor), and this occur in an increase in the diffusion constant [25]. Furthermore, the histopathologic features that are unique to atypical meningiomas create a complex, local environment that lead to restrictions on the normal diffusion of water molecules within these tumor [24].

Our result approved that 32.5% of meningiomas seen as isointense in signal intensity. Hadidy *et al* reported that the majority of meningiomas presented with isointense signal[29].

Most typical meningiomas 71.8% are hypointense and isointense, 28.2% are slightly hyperintense on signal intensity, Seventy five % of atypical meningiomas are hyperintense, Filippi et al found that 23% of typical meningiomas were slightly hyperintense while 70% atypical meningiomas had markedly increased signal intensity on DWI[(19)]. Similar result had been revealed by Kono et al[30].

CONCLUSION

Atypical meningiomas tend to be markedly hyperintense on diffusion-weighted MR images and exhibit marked decreases in the ADC values when compared with normal brain parenchyma. Benign meningiomas appear hypointense and have higher ADC values compared with normal brain. DWIs and ADCs can provide information useful to diagnose brain tumors that cannot be obtained with conventional MR imaging.

Conflicts of Interest: None of the authors have any conflicts of interest relevant to what is written.

Funding source: University funding was provided for: data collection, analysis, and interpretation; trial design; patient recruitment. No public funding was

received.

Ethical Clearance: The study was conducted in accordance with the ethical principles that have their origin in the

Declaration of Helsinki. The study protocol and the subject information and consent form were reviewed and approved by a local Ethics Committee.

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DOI Numher: 10.5958/0976-5506.2018.01366.9

The Effect of Conditioning Therapy and Model Therapy Toward Pre-School Child Behavior in Tooth Brushing

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ABSTRACT

Children usually tend to brush their teeth only in certain parts of the labial surface of the anterior teeth and the occlusal surface of the lower molars. This study analyzes the tooth brushing habits in children with conditioning therapy and therapy models based on observational learning theory. In this study a sample of preschoolers who brush their teeth incorrectly in Kindergarten Al-Ammin, Jekan Rayadengan. The results showed that there was a change in the level of knowledge, attitude, and behavior of brushing teeth before and after being given a treatment of conditioning therapy and model therapy. The results of the average difference test (t-test) showed that there were significant differences between respondents' behavior related to knowledge, attitude, and behavior about brushing their teeth before and after being given a treatment of conditioning therapy and model therapy.

Keywords*: conditioning therapy, model therapy, behavior, tooth brushing*

INTRODUCTION

Children usually tend to brush their teeth only on certain parts that are preferred, namely the labial surface of the anterior teeth and the occlusal surface of the lower molars.[1] Caries is still a child health problem so far. The World Health Organization (WHO) in 2010 stated that the incidence of caries in children is still 60-90%. That number is likely to continue to increase because the national Household Health Survey (SKRT) in 1990 was only 70%, but in 2003 it reached 90%. A 5-year-old child is 90% caries-free, realization and the fact that the Indonesian Child Dentist Association (IDGAI) reveals that around 90% of Indonesians experience tooth decay because most people think dental health is not a priority.[2]

The solution to the low habit of brushing teeth in pre-school children is one way of forming behavior through conditioning therapy. Conditioning therapy aims to get used to behaving as expected. The habit that is expected is the usual child to brush his teeth to prevent the onset of dental disease early. In addition to conditioning therapy, getting used to brushing teeth can be trained through behavioral formation using a model of therapy.

Formation of behavior by using a therapy model is done by giving examples through the behavior of both parents with the hope that their children follow the behavior of their parents. The way to shape behavior according to what is expected is by using a method of behavior formation with conditional therapy (habits) and by using model therapy (example) based on observational learning theory. Thus it is expected that the habit of brushing teeth in pre-school children can be increased and dental disease in children can be minimized.[3]

MATERIALS AND METHOD

This study uses a type of pre-experimental research: one-group pretest-posttest design. In this experiment presented with several types of treatment and then measured the results. In this study, there was one group that was given treatment namely conditioning therapy and model therapy for preschoolers' behavior in brushing their teeth. The population in this study were all preschool children in Kindergarten of Al-Ammin Mandawai Street Number 2A, Palangka, Jekan Raya District, Palangka

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Raya City. A sample of preschoolers who brush their teeth incorrectly in Kindergarten of Al-Ammin. The number of samples in this study was conducted using a non-probability sampling method with a purposive sampling of 45 people.

FINDINGS

Table 1. The Result of Pre and Post Test of Respondent Behavior in Teeth Brushing of Kindergarten Al-Ammin 2016.

No.	Question	Answer Value				Total	
		>60% (>10)		<59% (<9)		Amount	Persentage
		Total	%	Total	%	Total	%
1	Knowledge	3	6.2	45	93.8	48	100
		47	97.9	1	2.1	48	100
2	Attitude	32	66.7	16	33.3	48	100
		43	89.6	5	10.4	48	100
3	Act	9	18.8	39	81.3	48	100
		47	97.9	1	2.1	48	100

Table 2. The Result of Different T-Test in Knowledge Variable

Variable	Mean	SD	SE	Total Mean	Total SD	P-Value	N
Knowledge							
Pre test	16.25	27.877	4.024	76.25	32.39	0.000	48
Post test	92.50	13.448	1.941				

From the results of research on the behavior of respondents related to the level of their knowledge in brushing teeth, it is known that the average results in the first measurement are 16.2% with a standard deviation of 27.8%. In the second measurement, the average value of the respondent's knowledge level is 92.5% with a standard deviation of 13.4%. It can be seen from the mean value the difference between the first measurement and the second measurement is 76.25 with a standard deviation of 32.39. From the results of the measurement statistics of 2 variables, the p-value of 0.000 is obtained. So it can be concluded that there is a significant difference between the behavior of respondents related to knowledge about brushing teeth on the first and second measurements.

Table 3. The Result of Different T-Test in Attitude Variable

Variable	Mean	SD	SE	Total Mean	Total SD	P-Value	N
Attitude							
Pre test	75.83	14.267	2.059	8.33	25.377	0.028	48
Post test	84.17	21.421	3.092				

From the results of the research on the behavior of respondents related to their attitude in brushing teeth, it is known that the average results in the first measurement are 75.8% with a standard deviation of 14.2%. In the second measurement, the average value related to the attitude of respondents was 84.1% with a standard deviation of 21.4%. It can be seen from the mean value of the difference between the first measurement and the second measurement with a value of 8.33 with a standard deviation of 25.37. From the results of the measurement statistics of 2 variables, the p-value of 0.028 was obtained. So it can be concluded that there is a significant difference between the behavior of respondents related to the attitude in brushing teeth on the first and second measurements.

Table 4. The Result of Different T-Test in Behavior (Act) Variable

Variable	Mean	SD	SE	Total Mean	Total SD	P-Value	N
Act							
Pre test	9.31	1.323	0.191	5.31	3.047	0.000	48
Post test	14.63	2.742	0.396				

From the results of research on the behavior of respondents related to their actions in brushing teeth, it is known that the average results in the first measurement are 9.3 points with a standard deviation of 1.32. In the second measurement, the average value related to the attitude of respondents is 14.6 points with a standard deviation of 2.74%. It can be seen from the mean value of the difference between the first measurement and the second measurement with a value of 5.31 with a standard deviation of 3.04. From the results of the measurement statistics of 2 variables, the p-value of 0.000 is obtained. So it can be concluded that there is a significant difference between the behavior of respondents related to their actions in brushing their teeth on the first and second measurements.

DISCUSSION

Based on the results of the study it was found that changes in the behavior of respondents in brushing their teeth after conditioning therapy. Behavioral therapy typically functions as a teacher, director, and expert in diagnosing mal-adaptive behavior and in determining the expected healing procedures, leading to new and adjustive behavior.[4]

If a behavior rewarded, then the probability of reappearance of such behavior in the future will be high. The strengthening principle that explains the formation, maintenance, or elimination of behavioral patterns, is at the core of operant conditioning. The following is a brief description of the operant conditioning methods which include: positive reinforcement, the formation of response, intermittent reinforcement, deletion, piloting, and token economy. [5]

Positive reinforcement is the formation of a behavior pattern by giving rewards or reinforcement as soon as the expected behavior arises.

Response formation is the behavior that is now gradually being changed by strengthening the small elements of the desired new behavior in a row until it approaches the final behavior.

Intermittent reinforcement, given varied to specific behavior.

Abolition is on the basis that if a response is continuously made without reinforcement, then the response tends to disappear.

Modeling, the method by observing a person then exemplify the model's behavior.

Economic tokens, the token economy method can be used to shape behavior if other untouchable agreements and powers do not influence.

The involvement of targets in the implementation of behavioral therapy is very calculated. With the existence of a cooperative working relationship and of course a proper communication process, this behavior therapy activity can be directed towards achieving common goals.

Communication is indeed the most fundamental thing for humans as living beings. Humans always interact with communication not only with fellow human beings as social beings, but more than that human also communicates with themselves, with God, and the universe. Through this communication process, humans share information, feelings, and experiences continuously until there is a specific agreement or outcome, called the communication effect.

Operant conditioning is a therapy that is applied in a learning system that is carried out by translating the target's general purpose into a goal in the form of specific behavioral changes desired by the target, which is intended to find problem solving from the cognitive, affective, and psychomotor behavior of the target conduct instructional communication in the form of eliminating non-adaptive learning outcomes and providing adaptive new learning experiences.[4]

Based on the results of the study it is known that the behavior changes of respondents in brushing their teeth after the model therapy. Basic modeling is a social learning theory developed by Albert Bandura (1967). This theory accepts most of the principles of behavioral learning that have been discussed in the two discussions above but gives more emphasis on the effects of signals on behavior and internal mental processes.[6]

Modeling is one of the applications of social learning theory in the formation of individual behavior. Suppression of the effects of the consequences on the behavior and ignores the modeling phenomenon that mimics the behavior of others and experiences vicarious, i.e., learn from the successes and failures of others.

Participant modeling is a behavior modification strategy through observing behavior towards the model. One type of modeling is modeling strategies for participants. Modeling participants a treatment approach based on social learning principles and rated coined effectiveness in helping to address the problem of violence on a child's parents in everyday life.[7] In the participant modeling treatment, there appears to be an effect of changing the behavior of parents to their children, especially in the case of single parents. The research about sexual abuse prevention program in children with modeling techniques participants. Generate positive attitudinal changes to children's and parental skills in reporting and preventing sexual harassment compared to modeling programs symbolic.[8]

Modeling participants emphasized the in vivo performance on tasks that are feared, with consequences that are raised by the successful performance which is considered as a means for psychological changes.[9] Modeling is a strategy used to shape new behavior, improve skills or minimize behavior that is avoided. Modeling is involving the addition and reduction of behavior observed behavior, generalizes various observations at once, involves cognitive processes.[6]

From the description above, it can be concluded that participant modeling is new behavioral learning methods through observation of a person model, adding information through cognitive processes and will produce behavioral changes according to the modeled. Participants or models must have the expected criteria or behavioral characteristics according to the desired behavior. In this study, the expected behavior change is compliance in undergoing a therapeutic regimen program.

There are four essential components of participant modeling. (1) Rational, that is by seeing, practicing with guidance and will perform abilities independently. This is aimed at helping client difficulties. (2) The demonstration of the model. The model will pattern, and repetition is needed. (3) Guided participation. The client is given the opportunity to practice the behavior observed with guidance and is the essential component of learning to overcome a frightening situation to obtain new behavior. (4) Successful (strengthening) experiences. Clients will experience success from what they have learned; this is a reinforcement of the behavior that has been learned.[10]

CONCLUSION

There is a significant difference between respondents' behavior regarding knowledge, attitudes, and behavior about brushing teeth before and after being given a treatment of conditioning therapy and model therapy.

Ethical Clearance: Before conducting the data retrieval, the researchers conducted a decent test of ethics conducted at the Polytechnic of Health, Ministry of Health, Republic of Indonesia, Palangka Raya

to determine that this study has met the feasibility. Information on an ethical test that the study is eligible to continue. The feasibility of the research was conducted to protect the human rights and security of research subjects.

Source Funding: Self-funding from the authors did this study.

Conflict of Interest: The authors declare that they have no conflict interests.

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DOI Numher: 10.5958/0976-5506.2018.01367.0

Factors Related to Blood Glucose Levels among Type II Diabetes Mellitus Patients (A Cross-Sectional Study in *Kedungmundu* Public Health Center, Semarang)

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ABSTRACT

Diabetes mellitus (DM) is a disease that require continuous treatment and management in order to prevent complication. The aim was to determine DM in adult outpatient and to analyze correlation between some factors with blood glucose level in diabetes mellitus patient. The method was observational with cross-sectional study design. The amount of sample was 200 subject, all adult outpatient of *Kedungmundu* Health Center from May-August 2018 and willing to be tested and interviewed, selected by total sampling. Data were collected through interview with questionnaire and measurement of fasting blood sugar. We conduct univariate, bivariate and multivariate analysis. The result of research showed that 173 out of 200 respondents were diabetes mellitus, 60% respondents had an uncontrollable blood glucose level. Furthermore multivariate analysis showed that there was correlation between duration of diabetes, medication adherence, physical exercise level, type of physical exercise, duration of physical exercise and family supports with blood glucose level. It is suggested to give education not just for diabetic patients but also to the closest family of diabetes mellitus patient. DM patients suggested to do regular physical exercise with duration more than 90 minutes/weeks and increase the medication adherence to prevent the complication of the disease.

Keywords*: diabetes mellitus, medication adherence, physical activity, blood glucose level*

INTRODUCTION

Diabetes Mellitus (DM) is a chronic disease that occurs when the pancreas does not produce enough insulin or alternatively when the body cannot use the insulin effectively. Type 2 diabetes mellitus is the effect of impaired insulin secretion.[1] Results of Basic Health Research, Ministry of Health of the Republic of Indonesia in 2007 stated that 6.9% of the Indonesian population suffered from Diabetes Mellitus, 69.6% of which were undiagnosed. While in 2013 there were 5.7% of patients but the increase of undiagnosed DM patients become 73.7% were happened.[2] The prevalence of Type 2 DM in Semarang was 27%. [3] *Kedungmundu* Health Center is one of the health centers with the largest DM cases in the city of Semarang with a proportion of cases of 30.3% in 2015.

The proportion of DM in *Kedungmundu* Health Center is higher than the proportion of cases of DM in the city of Semarang. DM is characterized as chronic hyperglycemia which is drag the patient to the vasculature injury.[4] Management of blood glucose level is known to play important role in preventing diabetes complications.[5] Although the management of blood glucose levels has proven to be a factor that prevents complications of DM patients, previous studies reported that 60% of DM patients had poor blood glucose control.[6] This research wants to know the contributing factors related to the management of blood glucose

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levels among DM Type 2 patients in *Kedungmundu* Health Center, Semarang.

METHOD

This research is a quantitative research with observational analytic type. The study design used in this study is a cross sectional study design. This research was conducted from May to August 2017 in the work area of *Kedungmundu* Health Center Semarang. The population in this study were all outpatients who visited the *Kedungmundu* Health Center from May to August 2018 and willing to be tested and interviewed as much as 200 subjects. The sampling technique used is total sampling technique. Then, subject with positive DM result for blood glucose screening interviewed using questionnaire (173 subject). Variable dependent consist of the blood glucose levels, while independent variable consist of the duration suffered diabetes, obesity, physical activity, frequency of physical exercise, dietary compliance, medication adherence, family support, and motivation levels. The data obtained were then analyzed univariate, bivariate and multivariate to know the contributing factors of blood glucose levels.

RESULTS AND DISCUSSIONS

From 200 person who visited *Kedungmundu* Health Center, 173 of them diagnosed as DM Type 2. The results showed that most of the respondents are female (76.9%), aged 50-64 years (64.7%), working as housewife (66.5%). This result is in line with the study conducted by Ruhembe et al in Tanzania, found most of the respondents are female (60.8%), not working (38.93%), aged 30-40 years (43.84%).[7]

Table.1 The characteristic of the respondents (n=173)

Characteristic respondents	f	%
Sex		
Female	133	76.9
Male	40	23.1
Age		
36-49 years	29	16.8
50-64 years	112	64.7
>64 years	32	18.5
Occupation		
Retired	21	12.1
Housewife	115	66.5
Non-government employee	10	5.8
Entrepreneur	11	6.4
Labors	5	2.9
Others	11	6.4

Our study revealed that most of the respondents have uncontrolled blood glucose level (60.1%), more than half of them are diagnosed DM for less than 2 years ago (50.3%), obese (51.4%), and take the medication regularly (50.9%). There are 70.5% of them have mild psychical activities, usually they are walking (43.4%) with the frequency within 1 weeks <90 minutes (62.4%). They have high motivation levels (54.3%), more than half of them get family support (54.3%), and about three quarters of them (77.5%) are not adhere to do healthy DM diet.

This result is line with previous study conducted in Saudi Arabia found that 80.6% respondents are not following the meal plan, 69.1% high adherence in taking medication, 58% high adherence to do exercise.[8] While study conducted in Brazil found that 55.8% respondents don't get insulin treatment, with irregular dietary control (74.4%), and 82.2% of them are don't have dietary guidance.[9]

Table.2 The distribution of variables in DM patient (n=173)

Characteristic respondents	f	%
1. Blood glucose levels		
Controlled	69	39.9
Uncontrolled	104	60.1
2. Duration of suffered DM		
>2 years	86	49.7
<= 2 years	87	50.3
3. Obesity status		
Obese	89	51.4
Overweight	37	21.4
Normal	47	27.2
4. Medication adherence		
Adhere	88	50.9
Not adhere	86	49.1
5. Physical activities level		
Low	30	17.3
Mild	122	70.5
High	21	12.1
6. Type of physical activities		
Inactivity	57	32.9
Walking	75	43.4
Gymnastic	34	19.7
Jogging	2	1.2
Cycling	5	2.9
7. Frequency of physical activities 1 week		
<90 minutes/ week	108	62.4
≥90 minutes / week	65	37.6
8. Family support		

Cont... **Table.2 The distribution of variables in DM patient (n=173)**

Supported	92	53.2
Not supported	81	46.8
9. Motivation levels		
Low	79	45.7
High	94	54.3
10. The adherence of diet		
Adhere	39	22.5
Not Adhere	134	77.5

From table 3 revealed that the duration of DM, medication adherence, physical activities level, type of physical activities, frequency of physical activities in one week, and the family support were significantly associated with the levels of blood glucose among type 2 DM patients (p value <0.05).

Table 3. The contributing factors associated with blood glucose levels among patients type 2 DM in *Kedungmundu* Health Center

Variables	Blood glucose status				P value*
	Uncontrolled		Controlled		
	f	%	f	%	
Duration of suffered DM					
>2 years	53	61.6	33	38.4	0.030
<= 2 years	51	60.1	36	41.4	
Obesity status					
Obese	44	49.4	45	50.6	0.252
Overweight	34	91.9	3	8.1	
Normal	26	55.3	21	44.7	
Medication adherence					
Adhere	68	52.7	61	47.3	0.000
Not adhere	36	81.8	8	18.2	
Physical activities level					
Low	23	76.3	7	23.3	0.000
Mild	78	63.9	44	36.1	
High	3	14.3	18	85.7	
Type of physical activities					
Inactivity	29	50.9	28	49.1	0.007
Walking	56	74.7	19	25.3	
Gymnastic	14	41.2	20	58.8	
Jogging	0	0.0	2	100	
Cycling	5	100	0	0.0	

Cont... **Table 3. The contributing factors associated with blood glucose levels among patients type 2 DM in *Kedungmundu* Health Center**

Duration of physical activities 1 week					
<90 minutes/ week	62	57.4	46	42.6	0.003
≥90 minutes / week	42	64.6	23	35.4	
Family support					
Supported	31	33.7	61	66.3	0.000
Not supported	73	90.1	8	9.9	
The adherence of diet					
Adhere	79	45.7	55	31.8	0.157
Not adhere	25	14.5	14	8.1	
Motivation levels					
Low	48	60.8	31	39.2	0.780
High	56	59.6	38	40.4	

This results are similar with the previous study, found that the duration of diabetes is strongly associated with the glycemic control in patients living with type 2 DM.[10] Another study conducted by Rasheed et al revealed regular exercise is significantly related to the decrease of blood glucose level into normal range among DM patients.[11] Type of aerobic exercise such as cycling, walking and jogging affect the blood glucose, it tends to decline and increase the sensitivity of insulin.[12] The intensity and duration of physical exercises play important role on the glycemic control through glucose production shifts from hepatic glycogenolysis to enhanced gluconeogenesis as duration increase.[13] Support family is also related with glycemic control for people living with diabetes. This result is similar to those reported by Strizich who found that people with low family support are likely to have uncontrolled diabetes (OR =2,31; 95%CI:1,17-4,55).[14] Medication adherence also play important factors in glycemic control, the previous study revealed those with high adherence to oral hypo-glycemic medications were less likely to have poor glycemic control (OR=0,54; 95%CI;0,50-0,59).[15,16]

CONCLUSIONS

From 173 of 200 adult outpatient of health center were diabetes mellitus, 60% respondents of DM subjects had an uncontrollable blood glucose level and there was

correlation between duration of diabetes, medication adherence, physical exercise level, type of physical exercise, duration of physical exercise and family supports with blood glucose level

Conflict of Interest: The author reports no conflicts of interest in this work.

Acknowledgement: All the authors thanks to Ministry of Research, Technology and Higher Education for research funding (grant number: 101-123/UN7.P4.3/PP/2018). We also thanks to the Diponegoro University, study participant, *Kedungmundu* Health Center Semarang, for their cooperation in facilitating our study.

Ethical Clearence: Ethical clearance was obtained from Ethic Commission of Health Research, Faculty of Public Health UNDIP (094/EC/FKM/2018). All subjects signed informed consent to join the study.

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DOI Numher: 10.5958/0976-5506.2018.01368.2

Developing a Hospital Electronic Death Record and Storage System for Deceased Patients in Developing Countries

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ABSTRACT

Filling and storing the data of deceased patients by hospitals has been influenced by African cultural beliefs for decades. This research paper investigated the current practices of filling and storage of deceased person's data by hospitals. The study employed a case study approach in collecting data. Data was collected using semi-structured open ended interviews. It was revealed that the current practices involved paper filling and storage of dead patients' records and issuing of hand written death certificates. This resulted in time delays, errors in completion of the death certificates leading to pricey amendments and lengthy litigation in courts. The findings lead to the proposal of Framework for Hospital Electronic Death Record and Storage System (FHEDRSS) for developing countries to save time and effort, allowing error correction and enhanced accuracy, improving turnaround time for procuring certified copies of death certificates and protecting the archived documentations and the death certificates for many years.

Keywords: *African Culture; Paper Health Records; Electronic Health Records; Death Certificate.*

INTRODUCTION

Much has been written about electronic health record (EHR) system in healthcare environment. The functions of the EHR have been categorized into two main components; the direct health care functions and supportive health care function [1]. Direct care EHR functions enable delivery of healthcare and offer clinical decisions support [1]. For example, when a patient shows the symptoms of common cold, the direct care EHR function will enable the physician to record that event and provide clinical decision-support advice. The direct care function within EHR section will respectively offer legitimate prescription and alert for the medication given to the patient who has the symptoms of a cold [2,3;4]. On the other hand, the supportive function within the EHR system assists with the administrative and financial requirements associated with the delivery of healthcare[1]. Also, the EHR provides inputs to other sub-systems that perform functions like medical research and public health promotion.

Many state hospitals in developing countries (for example, South Africa) have some sort of sub- systems for delivery of healthcare services. However, one system which is not found as an integral part of the sub-systems within the hospitals is the electronic death record and storage system. Electronic death record and storage system is an electronic system that keeps all the files, death records and death certificates of the deceased person. It is an online collaboration system that links multiple service providers to access and use the electronic documentation.

In developing countries like South Africa and other African countries, it is embedded in their cultural beliefs that those who are dead are alive in a different world and can reincarnate (that is, return to this world) in new births[5]. Death is considered a rite of passage for those who die at an acceptable (old) age[6]. In cases of death occurrence in Africa, divination is many times resorted to, and the cause of death is determined from consulting dead ancestors and usually attributed to spiritual factors (witchcraft, offending one's ancestors, or Gods) rather than medical or physical reasons [7]. Therefore, registering and storing the records of the dead person is done with sensitivity and fear of curse among Africans The process usually done by paper records keeping. However, in contemporary African societies today, data about the dead person is needed for issuing of death certificate, which must be completed accurately and promptly since

these documents are needed for administrative and public health purposes. It is also needed by family members of the deceased to resolve estate and insurances policies of that dead person.

The problem is, the use of paper record for filing and storing of dead person's record increases the time of filling and the time to receive death certificates in this contemporary Africa. The paper records also compromise the quality of data sometimes received as the cause of death.

Therefore, the purpose of this research paper is to investigate the current practices of filling and the storage of the deceased person's data in hospitals. From the outcome of the investigation, an electronic death, record and storage system framework will be proposed for the hospitals.

The remaining sections of this paper are structured as follows; related work, methodology, results and discussion, and finally the proposed framework and conclusion.

Related Work

Paper Verse Electronic Health Records

This section elaborates on the differences and importance between paper health records and electronic health records (EHR). Electronic Health Record (EHR) is an electronic record of all health-related events for a person before birth and till death (womb-to-tomb health record!) [8].

With the definition and coverage of EHR, essential differences exist and have been identified between paper health records and EHR, in terms of location, readability, accessibility, traceability, supported care process and data self-sorting. All the stated attributes are better with electronic records keeping [9,2].

Due to the differences, the advantages offered by EHR over paper health records can be easily recognized. Patient health records with EHR are no longer restricted to the data generated within their local healthcare establishment. Data about the health history of patients and their current health status will be presented in a coherent and legible way. Secondly, access rules can be made explicit and strictly adhered to. Thirdly, the care process can be supported in a logistic sense, for example, physician order entry, appointments, as well as protocols and guidelines used to support the behavior and decision-making of healthcare professionals can be supported by the electronic documentation. Moreover, EHR is viable for 24-hour access. Data self-sorting, loss avoidance of records (dependent on resilience) and audit trail of document use are all benefits the EHR provides (Suomi 2006). All of these superiorities of EHR support modern healthcare practice by providing multiple functions, such as evidence-based healthcare[10] and increasingly efficient medical practices [11].

METHODOLOGY

In order to achieve the objectives of this paper, the researcher carried out the study in the North West Province of South Africa. Five governments owned district hospitals in the North West Province of South Africa were purposefully selected. The hospitals were selected considering their geographical locations, which spans across the entire province and the high number of patients served. The participants for the study were drawn from the population of doctors in the five hospitals. Two doctors from each of these hospitals were selected based on their professions. The ten selected doctors offered to partake in the study. Data was collected using semi-structured open ended interviews.

The interviewees were required to answer these questions in their own words:

1. What is the current practice of completing death certificates for deceased patients?

2. How do you file and store the death certificates?

3. Who are the beneficiaries of the death certificates?

The interviews lasted for one hour with each interviewee and were audio-recorded and transcribed by the researcher. The integrity of data entry from the study was checked by another independent researcher. The transcripts were coded using Wolcott's[12] method of case study analysis techniques. The main researcher and an independent researcher met to check the consistency of their interpretation after the initial coding. The researcher then coded the final transcripts, identified the main themes, and outlined likely relationships. Some broad categories of themes were identified by searching for patterns in the participants' responses. The different broad categories that were noted are discussed below.

RESULTS AND DISCUSSION

Current Practice of Completing Death Certificate

The respondents indicated that if a person dies of natural causes in the hospital, the doctor will issue a death notice also known as the BI-1663 Medical Certificate. The doctor fills in the forms, indicates the cause of death, signs it and issue it as an immediate medical certificate. Hospitals which do not have mortuary facilities, a funeral undertaker or director is contacted right away to collect the deceased body. State hospitals usually have mortuary facilities; therefore, the body remains there until a death notice is issued.

On the other hand, if a person dies at home of natural causes, someone contacts the doctor or the hospital first. The funeral director can be contacted to transport the deceased to a mortuary, provided the doctor is willing to issue a death notice. A death notice is issued from the deceased's doctor who must have seen the deceased within twenty-four hours of their death or within a judicious time whereby the doctor is certain of the cause of death. If the doctor declines signing the death notice, a private autopsy will be arranged by a funeral service to determine the cause of death. In this case, the pathologist at the mortuary where the autopsy is performed will issue the death notice.

For patients who die of natural causes at home and do not require an autopsy, there is a further requirement if they are to be cremated. Another doctor will need to inspect the body to establish that there is no reason why the body cannot be cremated. Both doctors then sign the cremation forms, and the forms are thereafter given to the medical referee at the crematorium, who then gives the last authorization for the cremation to take place.

Furthermore, if a person dies at home of unnatural causes, the police is first contacted. The police will organize removal of the body to a state mortuary where a compulsory autopsy will be performed and a death notice will be issued.

In all the cases above, a relative or friend identifies the body before the death notice can be issued.

Filling and Storage of Death Certificates and Previous Medical Records of the Deceased

The doctors indicated that the deceased records must be kept as direct evidence in case litigation arises in the future. The doctors reiterated that all documents of the deceased patients are kept in a paper form including any written notes taken by a healthcare practitioner thus, referral letters to and from other healthcare practitioners, laboratory reports, laboratory evidence such as, cytology slides, autopsy reports and death certificates and any other forms completed during the health interview with the deceased. The problem associated with the paper documentation is that such documentation can be viewed only at one hospital or location. Bakker[9] emphasizes that paper documentation stored in one health facility prevent other facilities and most especially other higher authorities from viewing such documents. It gives room to people who access one document to access all other data therefore; the use of electronic records will grant different levels of authorization of access to digital data. The issue of traceability of a file was raised by the doctors as a problem with paper documentation. You cannot trace who has seen the paper document or has handled it before. It is impossible to record who has seen the data and the last time the file was seen and used. Suomi [13] states that it is easier to keep and audit trial of these documents using electronic filling and storage system. It was further stated by the doctors that the head of the district hospital appoints a designated record manager. The record manger keeps a paper trail of every deceased person and stores them in the storage room.

Beneficiaries of Deceased Death Certificates and Cause of Death of the Deceased

On the question of who benefits from the death certificate and stored documents of the deceased, the doctors indicated that the families of the deceased person are the first beneficiary of the death certificate if issued on time. The families need this for burial preparation of the deceased. Again they need it for taking over the estate of the deceased. The respondent also indicated that, doctors, and other healthcare providers need it to justify the cause of death should it happen that issues of police and legal litigations crop up. Therefore, an electronic system of filling and storing of the deceased data is of curial importance. It makes the processing of information about the deceased fast and error free.

Other beneficiaries like funeral undertakers obtain the death certificate and plans the wake and funeral with the family. Therefore, paper processing of such documents may delay the process.

The Need for a Framework for Hospital Electronic Death Record and Storage System (FHEDRSS) for Developing Countries

Based on these findings, the researcher proposes a hospital electronic death record and storage system for deceased patients to save time and effort in filling and storing of data for the deceased. The proposed framework will eliminate errors made by doctors and enhance accuracy. It will also improve the turnaround time for procuring certified copies of death certificates.

The system will be a web based system which will function as follows.

The hospital will notify the department of home affairs about the facts of death and verify the deceased's identity number; Analyze the deceased's electronic medical record for potential causes of death; Code cause of death and identifying incomplete, insufficient, or illogical causes of death; Automatically identify and transmit information about death due to specific cases of public health importance to the appropriate state and national agencies; Verify, standardize and geocode addresses for deceased person (address cleansing); Facilitate exchange of information among EHRS, funeral home information systems (FHIS), and medical examiner information systems (MEIS); Provide medical certifiers - including medical examiners and funeral undertakers to access deceased electronic medical records for determining cause of death; Exchange electronic death records between jurisdictions for non-resident deaths; Exchange electronic death records between death registration jurisdictions and department of health.

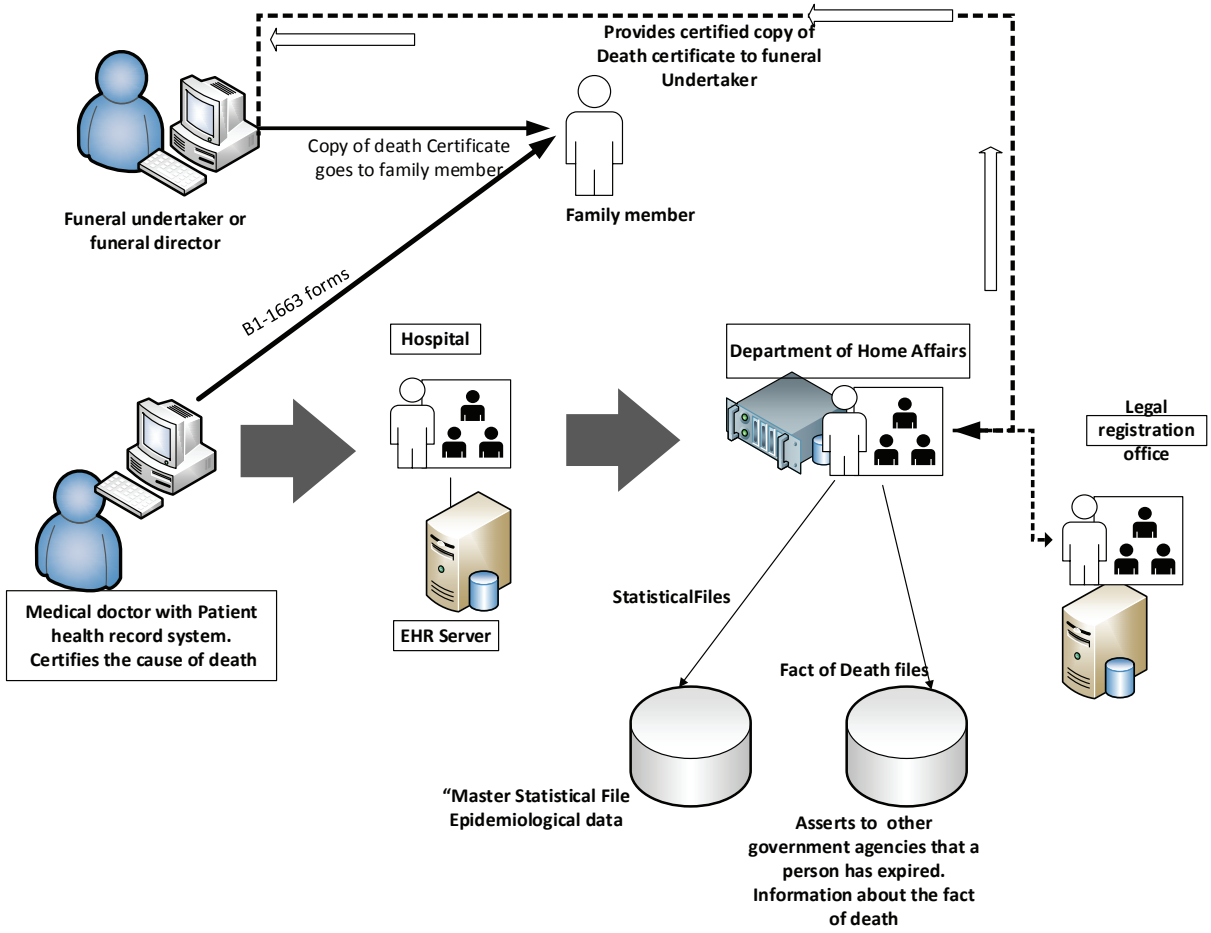

Fig. 1. Proposed framework for hospital electronic death record and storage system (FHEDRSS) for developing countries

Source: Author

When the patient dies in hospital, the doctor checks the patient health record system and certifies the cause of death. He issues B1-1663 cause of death certificate to the family member. The cause of death documentation together with all the medical records are stored in the hospital's HER server. The cause of death documentation that has been endorsed by the medical doctor is forwarded to the Department of Home Affairs. The Department of Home Affairs stores the documents in a "Fact of death files" database and issues actual death certificate to the funeral undertaker or funeral director upon request from the funeral undertaker. The legal registration office requests for a copy of the death certificate and it is sent to their office and stored in their database. Should the death have occurred through an unnatural cause and outside the hospital, the police information system must have a copy of the death certificate for storage in the police information database system.

CONCLUSION

This paper examined the process of filling and storing data of deceased patients in hospital. The paper further investigated how death certificates are processed and issued upon the death of a patient. The investigation unearthed the current practices of paper filling and storage of dead patient's records, and issuing of hand written death certificates results in time delays, errors in completion of the death certificates leading to pricey amendments and lengthy litigation in courts. In addition to these, long storage of documents renders some of the document destroyed and difficult to trace after 50 years.

The findings lead to the proposal of the Framework for Hospital Electronic Death Record and Storage System (FHEDRSS) for developing countries which will save time and effort, allow error correction and enhanced accuracy; improve turnaround time for procuring certified copies of death certificates and protect the archived documentations and the death certificates for many years.

Conflict of Interest: None

Ethical Clearance- Taken from UNISA ethics committee

Source of Funding- Self.

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DOI Numher: 10.5958/0976-5506.2018.01369.4

Sexually Transmitted Viral Infections Involving the Genitalia among Females in Nassiryia; a Clinical & Histopathological Study

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ABSTRACT

Background: Sexually transmitted infections (STIs) caused by viruses, are among the most prevalent infectious diseases worldwide and a major cause of morbidity and mortality, better understanding of these diseases may be critical for their prevention.

Objective: To shed light on the main sexually acquired viral infections in women in Nasiriya city.

Method: A cross sectional study was done in the period from April 2016 till April 2017, females of all ages attending the outpatient dermatology department in Al Hussain teaching hospital in Nasiriya; south of Iraq; having dermatoses in the genital area that were diagnosed to be viral infections were included in the study.

Results: A total of 260 female patients from all ages were seen & examined during the study period, the highest number (131) was among patients with molluscum contagiosum; among whom there were 28 baby girls with uncertain sexual mode of transmission, followed by genital warts (108) & the least were patients with herpes simplex (21).

Conclusion: viral STI's in women are important yet neglected diseases as most patients feel shy & postpone medical consultation, leading to delayed diagnosis & in many instances grave consequences.

Keywords: *female, genital, infective, sexually transmitted infections (STIs).*

INTRODUCTION

Sexually transmitted infections (STIs) are a major global cause of acute illness and infertility, with severe medical and psychological consequences for millions of men, women and infants. [1] Genital dermatoses are very common, but usually under diagnosed because of the embarrassment associated with it, many women were brought up with the prevailing cultural taboos about the female genitalia and are members of the ''down there'' generation where almost no words are spoken to refer to the female genitalia, internal or external. [2]

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The burden of STIs rests predominantly with the youth of society. [3,4,5] The majority of young women initiate sexual activity during adolescence, [6] and the risk for sexually transmitted infections (STIs) accompanies this initiation. [3]

Sexually transmitted diseases (STDs) have long been known to cause acute pathological syndromes, such as genital secretion and ulceration. However, they only recently have come to be considered significant causes of long-term morbidity, this is principally due to the large amount of information that has been collected about a group of agents that cause these diseases: the viruses. [7] After the association between virus and ano-genital cancer was established, viral STDs began to be recognized as important diseases that influence the health of women and breastfeeding infants, as well as

reproductive health. [8]

In Iraq, in spite of the conservative nature of the society, & the prevailing rule of no sex before marriage; the tendency towards early marriage exposes adolescent females to the same consequences of early exposure to sex & increasing number of STI's mainly viral seen daily in medical practice, & since these carry long-term health consequences, some of which are serious and life threatening, this study was designed to focus on the main risk factors & modes of transmission for better understanding & prevention of these diseases.

Patients & methods: A prospective cross sectional study was done, the patients included were females of all ages who were diagnosed to have viral infections involving the genital area.

Patients were seen & examined during the period from 1st April 2016 till 1st April 2017. A careful detailed history was taken from all patients, regarding age, marital status, pregnancy, their chief complaint, its duration, menstrual, obstetric & contraception history, history of sexual exposure & partner affection, personal or family history of diabetes or any systemic illness or skin disorders as atopy or psoriasis & a detailed drug history of the type of treatment used & whether this treatment has led to improvement or worsening of the condition.

A thorough physical examination of affected skin was done, together with examination for lesions elsewhere in the body. Clinical diagnosis was enough most of the time, still some patients needed further investigations like mycological (KOH mount), bacterial (Gram's stain & culture), hematological, serological, biochemical tests, & biopsy in selected cases.

Patients without visible skin lesions were excluded from the study (hepatitis ABC, & HIV).

A verbal consent was taken from all patients included in the study, together with a written consent from patients whose photographs were included in the study.

RESULTS

Two hundred sixty female patients were seen & examined during the study period, of (31.64) years mean age ± 14.238 SD.

Table one shows that molluscum contagiosum was the highest proportionally estimated disease among studied population (50.4%) followed by genital warts (41.5 %)

Table (1): the prevalence of viral infection in the study population

Dermatosis	Number	Frequency
Genital warts	**108**	**41.5%**
Molluscum Contagiosum	**131**	**50.4%**
Herpes simplex	**21**	**8.1%**
Total	**260**	**100%**

Figure one shows a very high significant statistical association between the durations of the different infections that were transmitted sexually before seeking medical advice and its occurrence, where F. E=308, P value= 0.0001

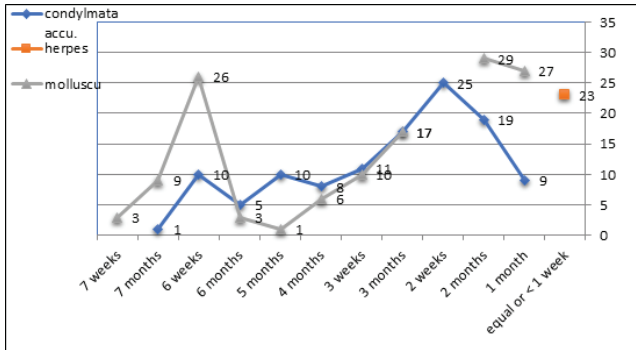

Figure 1: the duration of the viral STIs before seeking medical advice

Table two shows the main characteristics of the patients in the study, like the age range; where the highest prevalence (28.2%)was among the 20-29 years' age group, & nearly half of the reported cases were less than 30 years old.

Regarding the marital status, except for baby girls, there was a very high significant statistical association between the marital status and the diagnosis, as the majority (78.2%) were married women & the P value was higher than 0.05.

No significant statistical association was found between pregnancy & the risk of viral STIs, the same was true for contraception use where the P value was less than 0.05 for both.

Nearly equal prevalence was found for both married women whose partner was affected (51.7%) & those whose partner was not (48.3%).

The majority of the patients (83.8%) were healthy with only 10% had associated diabetes.

Table 2: Distribution according to patient's characters.

Variables **Age /yrs**		**Total**	**X2**	
	STD			**P**
	<10 years	28, 10.82%	28	28.394
	10-19 years	32, 12.3%	48	0.0001
	20-29 years	73, 28.2%	128	
	30-39 years	43, 16.6%	81	
	40-49 years	53, 20.5%	75	
	50-59 years	23, 8.5%	30	
	60& or more Marital status	8, 3.1 %	17	
Baby girls		28, 10.82%	27	50.021
divorced		4, 1.7%	8	0.0001
Not married		23, 8.5%	71	
Widow		2, 0.78%	2	
Married		203, 78.2%	299	
Total **Pregnancy** **Not**		260 182, 89,7%	 372	 0.250[a]
Pregnant		21, 10.3%	35	0.617
Total Contraception use No		203 165, 81.3%		
Yes		38, 18.7%	65	
Total Partner affection Yes No Total		203 105, 51.7% 98, 48.3% 203	40	
Co-morbid conditions Diabetes Anemia Hypertension Nothing **total**		 26,10% 10, 3.9% 6, 2.3% 218, 83.8% 260		

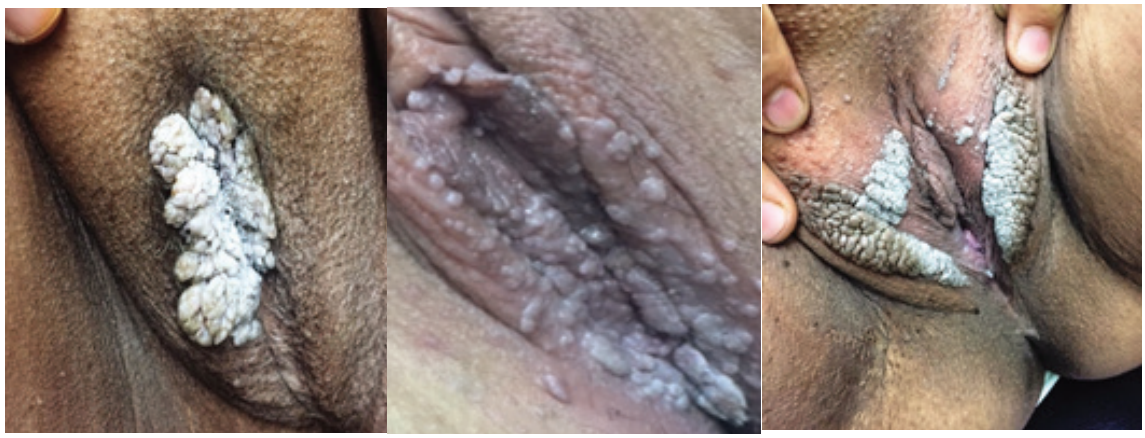

Figure 2 : Condylomata accuminata

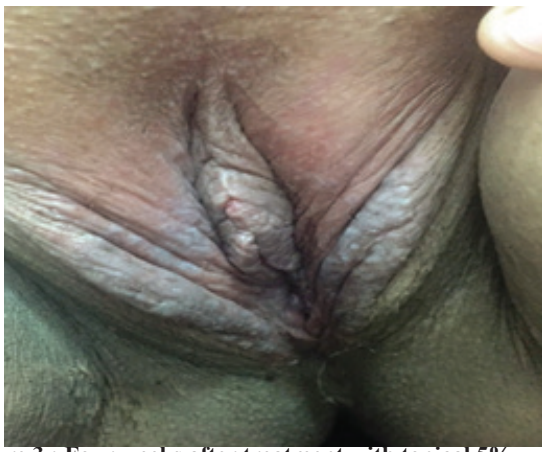

Figure 3 : Four weeks after treatment with topical 5% imiquimod cream

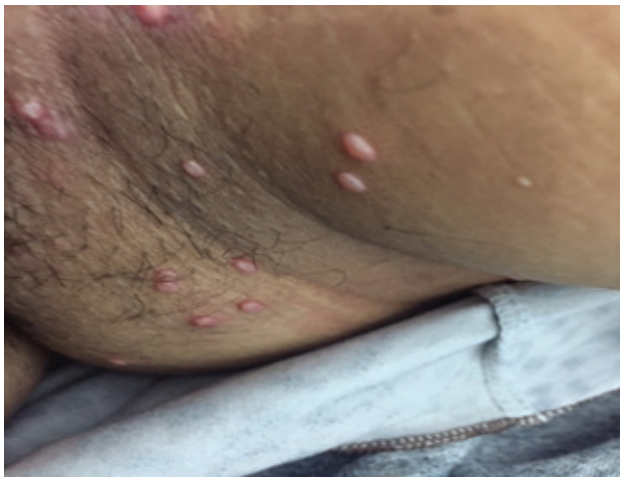

Figure 4: Molluscum contagiosum

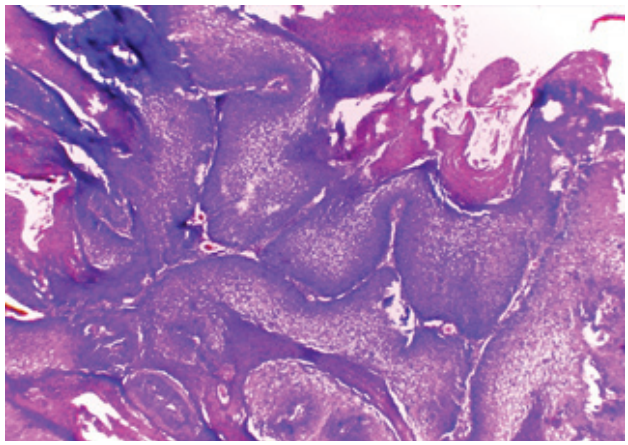

Figure 5: histopathological examination of Conylomata accuminata

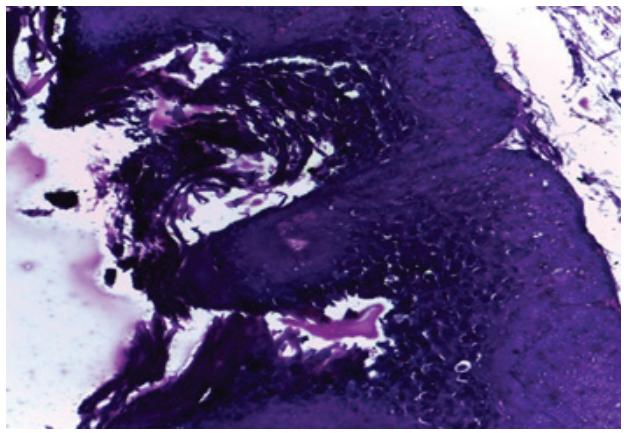

Figure 6: histopathological examination of Molluscum contagiosum

DISCUSSION

Sexually transmitted infections (STIs) caused by viruses, are among the most prevalent infectious diseases worldwide and a major cause of morbidity and mortality. [9] They are preventable, but unlike bacterial STIs the person may harbor the virus in her or his body

for life with periodic recurrences of active infection [10]

Women have a higher prevalence rates of STIs than men [11], it is estimated that females are three times more likely to be diagnosed with a new STI, [12] that is why it is important to understand the gender-specific differences in STIs in order to develop preventive strategies for these diseases.

Most of the patients 131(50.4%) in the present study; had molluscum contagiosum(MC), but if we exclude the number of baby girls (28) with uncertain sexual mode of transmission, then the actual number would be 103(39.6%), genital warts constituted (41.5%), & herpes genitalis (8.1%), in the literature; genital warts (condylomata accuminata) are still the commonest STI, [13] also in Ireland they accounted for 34.1% of STIs reported in 2005.[14] while other reports claim that herpes genitalis is the most common STI in the world, [2]

We did not come across any report of molluscum contagiosum being the commonest STI, this higher prevalence might be explained by the higher prevalence of molluscum contagiosum in general in our society, a cross-sectional study in Iraq showed that MC virus infection represents (8.9%) from all dermatological patients who visited Al-kindy Teaching Hospital over the six months' study period.

Also, 52.5 % of dermatological infections were MC, it was high percentage in comparison to other dermatological infectious disease [15]. This increase in MC infection may be explained by overcrowding and large Iraqi families; a lot of people were grouped together during social and religious events using same towels and beds, which can encourage spreading the virus by direct skin to skin contact [16], as the virus is reported to be more common in warm countries with a high population density. [13]

The lower presentation of herpes genitalis in the study might be due to the fact that most recurrent episodes of herpes simplex genitalis are either asymptomatic or have mild symptoms [17] which does not necessitate medical consultation.

There was a very high significant association between the duration of the illness before consultation; 72.5% of patients with Molluscum contagiosum sought medical advice in less than 2 months' duration, compared to 66.6% of patients with condylomata accuminata, while all patients 100% with herpes genitalis presented with 1 week or less history, this might be attributed to the severe pain & dysuria accompanying this condition [18,19] on the contrary to the asymptomatic behavior of both molluscum contagiosum & condylomata accuminata.

Delays between the onset of symptoms and reaching a definitive diagnosis of problems involving the genital area were reported in the literature to be between 18 months to 10 years, [20] due to facts related to embarrassment or fear of a grave diagnosis as genital skin symptoms often trigger concerns of poor hygiene, sexually transmitted infections, or undiagnosed cancer. [21]

This earlier reporting to health care in this study might be explained by the fact that most of the patients were married with an easier access to health care providers, adding to the presence of almost free health services to women in antenatal clinics.

More than 40% of the patients were less than 30 years of age (excluding the 10.8% baby girls), with 12.3% adolescents, this is not at variance with the literature, in Ireland, the burden of STIs rests predominantly with the youth of society & approximately 50% of new diagnoses are in young people under the age of 25 years [12], another study in 2010 showed that almost 75% of STI diagnoses occurred in individuals aged less than 29 years and 12.7% were in those aged less than 19 years,[22]in USA the adolescents represent at least one-quarter of individuals infected with STIs while two-thirds of STIs occur in those aged under 25 years,[3] The situation is similar in Australia, where over 25% of chlamydia infections in 2011 were in those aged less than 20 years [23].

This resemblance in the results despite the big difference in the social behavior between the socities might be related to the earlier age of marriage in the population of the study as pre-marriage sex is not practiced.

Excluding the children in the study, 78.2% of the patients were currently married, table (2), this is a very significant association with P value more than 0.05, & is in accordance with the literature of the increased ratio of STIs with sex exposure [24,25,26] which in the patients included in the study coincides with marriage.

On the contrary, there was no significant association with pregnancy or the use of contraception, with P value

less than 0.05.

Children constituted (10.82%) of the patients with genital & perianal lesions of MC, they are unlikely to be sexually transmitted as reports have confirmed that genital and perianal lesion can develop in children and are rarely associated with sexually transmission in this population. [27,28]

No significant difference was found between married women whose partners were affected (51.7%), or not (48.3%), a lot of reports in the literature focus on the relation between the age of the sexual partner & the acquisition of STI, adolescent girls with older male partners are at increased risk of sexually transmitted infection, the importance of this association in young adults is unclear. [29] Having multiple partners on the other hand was positively associated with a diagnosis of bacterial infection but not viral infection. [30]

The majority of the patients (83.8%) were otherwise healthy, only a minority had hypertension, anemia & diabetes,

Smoking, alcohol and drug are regarded as markers of risk-taking behavior for STIs; [30] were all negative due to the conservative nature of the society.

CONCLUSION

Sexually transmitted infections (STIs) are a major public health problem, especially in developing countries, viral STIs are on a rise. Being non-curable, prevention and early diagnosis are key tools to prevent their grave consequences, sequelae & complications. Future research and public health preventive efforts are needed especially in women; the main victim of these diseases.

Ethical Clearance- Taken from: Health Committee in Thi-Qar Health Department, Thi-Qar province

Source of Funding- Self

Conflict of Interest - None.

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DOI Numher: 10.5958/0976-5506.2018.01370.0

Factors Associated to Infant Vaccination in Madurese, Indonesia

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ABSTRACT

In Madura, a lot of infants have incomplete immunization status in which one of the areas with low immunization coverage is Burneh sub-district. The coverage of complete basic immunization in Burneh only 64% in 2015. The aim of this study was to analyze factors related to vaccination in Madurese, using cross sectional design. The sample were 97 mothers with babies 0-1 years old in Burneh sub-district. Data were collected using questionnaires, then analyzed using Chi square test. The results showed the correlation between knowledge (p = 0.027), confidence (p = 0.000), attitude (p = 0.003), culture (p = 0.000), access to health care (p = 0.013), family support (p = 0.034), and support of health professionals (p = 0.021) with the basic immunization status. Meanwhile, the support of community leaders (p = 0.054) had no correlation with the basic immunization status.

***Keywords**: Culture, Family support, Immunization, Knowledge, Madurese, Confidence, Attitude, Access to health care*

INTRODUCTION

Immunization is an induction of immunity in infants and children to protect them from various diseases so that they grow up healthy[(1)]. In Madura, many infants did not receive complete basic immunization which was proved by the high cases of diphtheria in Bangkalan, Madura. According to the Regent of Bangkalan, there are three villages in sub-districts of Blega, Tanah Merah and Burneh defined as areas with extraordinary occurrence of diphtheria[(2)]. Head of Public Health Office of Bangkalan explained that according to data compiled by Madura Terkini, the infant mortality rate has risen in 2015 as many as 154 cases. This number is greater than in 2014 with 112 cases[(2)].

According to preliminary study conducted by researchers on March 2016 at the Public Health Office of Bangkalan, the total infant in the Public Health Center (PHC) of Burneh region was 980, while the number of infants who have received complete basic immunization only 627. So there is only 64% infants in Burneh who were completely immunized.

Basic immunization rate in Burneh district from 2012 to 2015 has been uncertainly up and down. In 2012, the coverage of basic immunization was 60.8%. This rate declined into 58.4% in 2013. However, in 2014, the coverage increased to 68.2% which then recurrently declined to 64% in 2015.

Madura is well-known as a society which strictly upholds the cultural norms. Madurese people still believe in the statement or doctrine of the ancestors from antiquity. The people also believe in assumption that the healthy children without any disease should not be brought to health care service to get injection or other treatments. Local health professionals has been actually conducting basic counseling about immunization to mothers who have babies in Burneh district, but somehow the the immunization coverage is still below the target of 100%. Many factors affect the low coverage of immunization in infants. Based on the theory of Green (1991), the behavior of an individual as well as society is affected by three factors: predisposing factor, enabling factor, and reinforcing factor[(3)].

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Based on the problems above, the authors was interested to analyze factors related to basic immunization status of infants in Madurese people.

MATERIALS AND METHOD

The population of this cross sectional were mothers with infants aged 0-1 year old in Burneh. Sample size were 97 people selected using cluster sampling. The study was conducted on July 2016. The independent variables were knowledge, beliefs, attitudes, values and norms (culture), access to health services, family support, health professionals support, and community leaders support, while dependent variable was basic immunization status. Data collected using questionnaire, then the categorical data were presented in the form of frequency table[4] and analyzed using Chi square test.

FINDINGS

Table 1 provides a summary of the results of the correlation analysis between knowledge, beliefs, attitudes, values and norms (culture), access to health services, family support, health professionals support, and community leaders support with basic immunization status.

Table 1. The 8 independent variables and basic immunization status as dependent variable

Independent variables	p-value	Interpretation
Knowledge	0.027	Significant
Belief	0.000	Significant
Attitude	0.003	Significant
Culture	0.000	Significant
Access to health service	0.013	Significant
Family support	0.034	Significant
Health professionals support	0.021	Significant
Community leaders support	0.054	Not significant

Based on the results of hypothesis testing (Table 1) it could be interpreted that there were 7 independent variables that correlate with basic immunization status namely knowledge, beliefs, attitudes, culture, access to health services, family support and health professionals support.

DISCUSSION

According to Green (1991) the behavior of an individual or society about health is determined by the level of knowledge in which the person have. Higher knowledge of mother about the health of the infant, especially for the provision of basic immunization, will influence the mother to visit the place of immunization service[3].

Other studies have explained that knowledge of mothers about immunization is also influenced by the level of education and occupation. Rizani et al (2009) stated that education is a very important factor in determining the behavior of mother because a mother with higher education will affect the knowledge of his family's health in which a lot of information is acquired in school. On the contrary, the mothers who did not working will have more time to gather with their children[5]. Mother's knowledge on the children's health is mostly still at level knowing and has not reached the level of understanding, applying, analyzing, synthesizing and evaluating the materials related to immunization[6]. Furthermore, a person who has fair economic and earnings will likely have a good education and knowledge. However, the study that has been done showed that there are nine women who have a good knowledge about immunization but is not practicing immunization for their infants. According to some respondents, they will understand the benefits of immunization as well, but because of busy work and the obligation of taking care the other children they did not carry their infants to the immunization services.

According to WHO the belief is often obtained from parents or grandparents. A person receives his/her belief based on trust and without evidence[7].

Education level of individual related to the level of understanding and perceptions about health and illness[7]. Someone who is highly educated will better understand and believe when their body is not going well and looking for a modern health service immediately to prevent the occurrence of disease, for example, by immunization. In addition, the number of children also will indirectly affect the mother's belief to immunization. Further, good experience and perceived benefits of immunization from previous child will certainly influence to mother's belief to basic immunization in which this belief will support the mothers to immunize their infants.

However, number of children and mothers' job in domestic work make mothers do not have enough time to bring their babies to the immunization service although the views and belief upon support good benefit from basic immunization in infants support the mother to do it. From this study, there were 25 mothers who have unsupportive belief to the immunization but still provide basic immunizations to their infant. According to Ali (2000) in Rini (2009), observation or information obtained from education, may make changes upon behavior which evolve the occurance of new behavior. All activities performed by mothers in implementing basic immunization to their infant are the results of knowledge and information from their education[8].

Attitude is a form of evaluation or feeling reactions. Attitudes towards an object can be in the form of supportive and unsupportive feeling about an object. Positive attitude can be predisposing factor which causes the mother to bring her infant to be immunized[3].

Based on research by Rizani et al (2009) which stated that people's attitude and behavior is the ability, experience and education[5]. Age and education level illustrate the maturity of an individual to behave and respond to the environment that can affect knowledge, attitude and practice especially in health behavior. Mother's experience with the perceived benefits from previous children also have positive influence to their attitude and will promote mother's behavior to bring their children to health care service in order to receive basic immunization. Furthermore, Rizani et al (2009) stated that mothers' occupation, either who work or does not work, also has relationship with their attitude towards immunization[5]. Working mothers are likely to be more informed of the disease and the benefits of immunization so they will be likely more motivated to immunize their infants.

However, this study showed that there were some women who had negative attitudes about immunization but has been completed immunization for their infants. According Notoatmodjo (2007), an attitude is not automatically realized in an action (over behavior) because to change attitude into habit needs supporting factor or a condition that make it possible, such as facilities and support of other parties[7].

Culture can be regarded as living habits in a community. Interview results by researchers showed that some societies have supportive culture upon immunization, but in practical, they did not bring their infants to the immunization services. It can be caused by the schedule in which they have to work from morning to afternoon and can not bring their infants to PHC. In some cases, the parents tended to spend their money for other daily needs rather than accomodation for immunization.

According to Lawrence Green, the reason for not carrying their children to be immunized is the lack of information about the benefits of immunization or the distance between home and immunization center which is too far[3].

This results correspond with the research of Widiastuti et al (2008) which stated that there was a significant relationship between access to health care services and the basic immunization in infants. The relationship between both variables is also influenced by occupation, income, and number of children[9]. Risnawati (2012) stated that access to health care services for getting immunization is not depend on the family income, because the immunization coverage has been covered by the government both for its budget and the accessible service by the immunization service center[10].

This study found several mothers who have access to health care service with incomplete immunization status in their infants. This phenomenon is exist because these mothers have less education and information about immunization.

According to Feiring and Lewis (1984) in Yasin

(2014), good family support is influenced by several demographic factors including: maturity in relation with mothers' age, mothers' education level and occupation[11]. The knowledge about basic immunization benefits will increase along with the maturity in which the mothers can explain to the family about those benefits so that their support for immunization will be better. The mothers who have higher education are more aware about the importance of completing basic immunization, so that they will obtain support to carry their infants to the health care service. However, the results of this study showed that there were nine mothers who receive good support from their families but the status of basic immunization were incomplete. It was caused by the mother's myriad work and responsibility to care other family members as well as children so that they can not bring their infants to health care service regardless the support.

Based on the theory of Green, the health behavior can also be determined by the availability of facilities, attitudes and behavior of health professionals which will support and strengthen the behavior development[3].

According to the most respondents, support, friendliness, and information obtained from local health professionals are very valuable and have positive impact for them. In several times, health professional along with health caders visited homes for medical examination, particularly the administration of basic immunization in infants and children. So that the mothers who work or who are busy taking care of her family will be stay informed about basic immunizations and can immunize her infant during visitation of the health professional. Although the support of health professional has been sufficient in PHC of Burneh, but there were several mothers who still refused to immunize their infant due to their low education about immunization as well as their business and occupation which makes the mothers did not have any time to provide immunization for their infants.

According Notoatmodjo (2010), Indonesian people is a paternalistic society which usually refers to the behavior of leaders, both formal and informal. The leader is a person who has influence, be honored, and well respected in the society such as public figure and religious leader in which their existence will influence the society[6]. Mostly people actully understand about the benefits of immunization, then the facility is also provided such as PHC and health care service for immunization, but they still hesitate to give immunization to their children because the leaders or public figure also does not join the immunization program for their children.

Based on Green (1991), community and religious leaders become reinforcing factor for the behavior development of an individual or a community. Therefore, the community and religious leaders have crucial role in providing support to people's view and healthy behavior for the surrounding community[3].

CONCLUSION

Based on the results, it can be concluded that knowledge, beliefs, attitudes, culture, access to health services, family support and health professional support were related factors with basic immunization status in infants.

ADDITIONAL INFORMATION

There is no **Conflict of Interest** related to this research.

All **Funds** of this research taken from researchers.

This study already has **Ethical Approval.**

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DOI Numher:10.5958/0976-5506.2018.01371.2

Assessment Potential of Families Increasing ability to Care for Schizophrenia Post Restrain at East Java, Indonesia

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ABSTRACT

After the life of the schizophrenia, post-Restrain is a person who has been free from restraining, but the burden on the client family schizophrenia post-Restrain has not been said to end the role in family factors and local cultural values.

The Aim of this research is to Assessment Potential of Families increasing ability to care for schizophrenia post-restraint. This study was an observational study with cross-sectional approach. Exogenous variables are the cultural value and the potential of the family, the endogenous variable is the ability to care for schizophrenia post-restraint. The population was 157 families, the study sample using cluster sampling method, using a questionnaire study. The analysis used is descriptive analysis and structural testing of the model with Structural Equation Model AMOS.

The result of this study Potential families increased the ability to care for schizophrenia post-restraint, family and cultural values do not increase the family's ability to care for schizophrenia post-restraint directly but must go through a potential family. The influence of a strong family culture values indirectly affects the family's ability to care for schizophrenia post restraint. Cultural values and the potential for family care for schizophrenia post-restrain families increased. Cultural values can increase the potential of the family thus increasing the family's ability to care for schizophrenia post restraint.

Keywords: *Potential Family, Caring, schizophrenia, restrain, SEM*

INTRODUCTION

The family is the basic unit of community services and primary caretakers of family members. Families have the experience, especially in determining how the care needed by family members [1]. One role of the family has the same properties as a member of the family role that knows the situation of family members. That situation applies to the role of families who have family members with mental illness [2].

Schizophrenia is a severe mental illness affecting (0.3%-0.7%) of the population worldwide, Characterized by three domains of psychopathology, Including the negative symptoms (social withdrawal, lack of motivation and emotional reactivity), positive symptoms (hallucinations, delusions) and cognitive deficits (working memory, executive attention function). It is Considered a leading cause of disability [3, 4]. Based on the results of Health Research (Riskesdas) Ministry of Health in 2013, the prevalence of the mental-emotional disorder is indicated by symptoms of depression and anxiety for ages 15 and overreached around 14 million people, or (6%) of Indonesia's population [5]. While the prevalence of severe mental disorders, such as Schizophrenia about 400,000 people, or about 1.7 per 1,000 population. While in East Java, as many as 728 people with schizophrenia post-restraint [6] .

The family cares about the development of post restrain schizophrenia, but most of them choose to

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not respond to the condition of psychiatric patients [7] .Significantly indicated resources to that experiential avoidance mediated the relationship between each of the four Recognized patterns of gender role conflict [8] .

The stigma of mental illness is a multi-faceted phenomenon requiring an understanding from the perspectives of the general public, healthcare providers, persons with mental illness, and their family members [9] .This phenomenon may assume various forms, from the limitations in interpersonal relations, through narrowing Reviews These relations to only some circumstances While the role of informal family, among others, as the originator, negotiator, barriers, ruler, crooks, followers, admission seekers, family caregivers, pioneer family, bullies, coordinator of the family, and the audience [10,11,13]. The intent was to help clinicians and Researchers identify individuals Suffering from the disorder and Facilitate assessments of severity, comorbidity, and prognosis as well as treatment options. Cultural value and potential of family members in the family take to care of patients [12, 14, 15].

MATERIAL AND METHOD

The study design was observational with cross-sectional use. Cluster sampling was used to recruit participants from six districts in East Java. studies conducted by taking a relatively short specific time and place. The participants included 157 families with a family member who has a mental illness in East Java. The inclusion criteria were the decision-makers, Age 17 years, caring for the mentally ill, the family Treaty. sampling method using cluster sampling technique. The analysis used is descriptive analysis and structural testing of the model with Structural Equation Model (SEM) AMOS.

FINDINGS

Tabel 1 shows Participant characteristics**,**

Tabel 1 The Characteristic Of Family Caregivers N (157)

Characteristic Of Family Caregivers N (157)	**N = %**
Gender	
Male	45 (29)
Female	112 (71)
Age (M)	
Caregivers	27,40 years
Living in one house	27,43 years
Marital status	
Divorced/never married/widowed	67 (43)
Married	90 (57)
Duration of illness (M)	3,4 years
Employment	
Full time/part time	109 (69)
Unemployed/retired/student	48 (31)
Education	
Illiterate	45 (29)
Primary	84 (54)
Secondary	4 (3)
High school diploma	22 (14)
College	2 (1)

Cont... **Tabel 1 The Characteristic Of Family Caregivers N (157)**

Residence	
Urban	31 (20)
Rural	126 (80)
Relationship: caregiver is patient's	
Spouse	34 (22)
Parent	77 (49)
Child	12 (8)
Sibling	34 (22)

Table 2. Causality Associated

Causality Associated		**r**	**T**	**Cronbach's alpha**	**Significant**
Potential Family					
Family Functions		.746		.84-.88	Significant
Stress Family		.704		.82-.89	Significant
Family Structure		.803		.89-.98	Significant
Stigma		.863		.82-.85	Significant
Culture Value					
Tolerance		.767		.83-.87	Significant
Volunteer		.748		.85-.88	Significant
Ability care					
Care		.655		.79-.87	Significant
Decision		.607		.87-.88	Significant
Identification		.600		.88-.92	Significant
Modification		.723		.89-.91	Significant
(X1) cultural values (Y1) → potential family		.600	5.36		Significant
(X1) cultural value (Y2) → The ability to care		.259	1.77		No Significant
(Y1) potential family (Y2)→ ability to care for		.515	3.12		significant
Direct Effect Line	Immediately Effect Value				
(X1) *cultural values* (Y2) → Ability to care	(X1) *Cultural values* → (Y1) Potential Family → (Y2) ability to Care = .59 x .50 = .30				

Note. r = Correlation; T = T value

The results showed the cultural values affect the role of the family, the role of the family affects the ability to care for and the potential effect on the ability of families to take care of the results of the analysis with the software for. The Structural Equation Model (SEM) AMOS can be seen in (Table 2). Based on the results in Table 2 note that the exogenous variables affect significantly to endogenous variables, except cultural variables with variable ability to treat significant. indicators of potential family, coping strategies and indicators of treatment the ability to utilize health services are not good enough to build an endogenous variable. Table 2 illustrates that cultural values affect the ability to maintain direct stronger than cultural values affect the ability to take

care of automatically mean that the cultural value through the potential for more family greatly affect the ability of the family in care of. cultural values affect the ability to maintain direct stronger than cultural values affect the ability to take care of automatically mean that the cultural value through the potential for more family greatly affect the family's ability to care for

DISCUSSION

Cultural values Reviews These are of immediate relevance for the regulation of the behavior of individuals in their direct community environment. The research proves that the empowerment of families has a significant impact on family coping to help people, especially schizophrenia, post-restraint. Family empowerment can be used to solve the psychological problems of the family. the socio-cultural family is an open system as a means to meet the needs of caring for [18,19] .

Indicator stigma can also be explained by cultural values. Reviews. Families who have family members with schizophrenia post restrain embarrassed by the bizarre condition. It is also consistent with research, post restrain schizophrenia are often treated inappropriately by the family and society. Stereotype endorsement, discrimination experiences and social withdrawal differentially Also related to symptoms and social functioning [20, 21, 22] .

Cultural values encourage the formation of family potential as a form of internal factors are derived from the family itself. Family caregivers of care recipients with chronic illnesses. Understanding what African American women who are family caregivers value are important, and giving them an opportunity to judge Reviews their Quality of Life may be empowering [25, 33] . Families affected by the potential of cultural values. So the potential for a family becomes a major factor in improving the ability to treat schizophrenia, post-restraint. So the ability to treat schizophrenia post must restrain indirectly through potential families affected by cultural values [26, 27] .

Based on the research found that the indicators show a problem, decision-making, maintenance, modification, and utilize health services are very good in forming the ability to care for the client. on the results of this study also found that the ability to treat schizophrenia post restrain in recognizing the problem stems almost all clients have good skills. While the decision found that almost all of the clients have good skills [28] . While the indicators of environmental modification find most clients have skill was good, but less health care utilization indicators. it is in line with the results:

The results showed that the participation of the family has a good impact on patient care. The impact of, among other things, improve the independence of patients, optimization role in society, and enhance problem-solving skills [30] .

Based on the explanation of the above results it can be concluded that there is a cultural influence on the potential value of the family and there is the potential ability to treat schizophrenia families post-restrain.

CONCLUSIONS

In Summary, Cultural Values that can either create a potential family for the better. Cultural values necessary to increase the potential of the family. Tolerance among family members and volunteers have a significant influence in shaping the stigma in the family, family structure, family functioning, family coping strategies. Potential directly affect the family's ability to care for psychiatric patients post-holding. So that the potential of the family becomes a major factor in improving the ability to care for psychiatric patients post-hold in knowing the problems, decision-making, treating clients sick, modifications to the environment but to the utilization of health service indicator is not significant in shaping the ability to improve care for schizophrenia post restraint, Cultural values of good family could not be sure will make the ability to care for patients post withstand life for the better. Family culture values will affect the ability to care for psychiatric patients post-hold in East Java if through a potential family. Cultural values that can increase the potential of the family thus increasing the post-treatment restrain psychiatric patients.

Conflict of Interest: The Author (s) declare that they have no conflict of interest

Source of Funding: Others source,

Ethical Clearance: This study was approved by the institutional review board of Menur Mental hospital Surabaya (No.423.4/4149/305/2016). The research received a certificate from the hospital ethical permission.

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DOI Numher: 10.5958/0976-5506.2018.01372.4

Role of Vitamin C as Antioxidant in Psoriasis Patients Treated with NB-UVB Phototherapy

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ABSTRACT

Background: Psoriasis is a chronic inflammatory skin disease that has been associated with abnormal plasma lipid metabolism and oxidative stress.

Objective: To assess the anti-oxidative effect of vitamin C supplementation in psoriasis patients treated by NB-UVB phototherapy and its correlation with the disease severity.

Method: A single blind randomized clinical trial included 74 patients with clinically diagnosed psoriasis, conducted at AL-Sadr Medical city and department of Laser research in AL-Najaf City during a period one year. The patients were assigned randomly in to two groups be treated with NB-UVB only or NB-UVB+V.C supplementation of (500mg) twice daily for 12 week and followed up to assess their responses.

Result: Vitamin C and GSH were significantly increased while serum level of MDA significantly reduced, ($p<0.05$) in NB-UVB+V.C compared to NB-UVB only group. A significant decrease in GSH and increase in MDA ($p<0.05$). A statistically significant correlation (positive) was found between V.C and GSH and negative correlation was found between V.C and MDA levels after treatment($P<0.05$) in NB-UVB+V.C group. PASI score was insignificantly correlated with V.C, GSH and MDA, ($P>0.05$).

Conclusion: Vitamin C supplementation has a significant role as a safe anti-oxidant in psoriatic patients treated by NB-UVB phototherapy.

Keywords: *Psoriasis, Vitamin C, GSH, MDA, Oxidative stress.*

INTRODUCTION

Psoriasis is a well-known skin disease affecting 1 to 3% of the population[1]. Psoriasis is characterized by well demarcated, erythematous scaly silvery plaques. It is simply distinguished, but unusual forms are not easy to identify[2].Keratinization disorder, inflammation and exaggerated abnormal disordered epidermal cell proliferation play the main role in the pathogenesis of psoriasis , however, previous studies have connected the oxidative stress and pathogenesis of psoriasis at different levels[3] . Some researches documented increased levels of oxidative stress markers ,decreased levels of antioxidants and the activity of the main antioxidant enzymes in patients with psoriasis [4,5],The use of antioxidants can protect the epidermis from epidermal toxicity, the antioxidant roles of vitamin C (V.C) have been documented, as it has many roles in cellular metabolism, aids in oxidation reduction reactions and acts as an enzyme cofactor. Therefore, vitamin C can be adjunct in the treatment of psoriasis , where some studies indicated that increasing intake of V.C may help in prevention or reduction the disturbance between oxidative stress and antioxidant defense in psoriasis [6,7] . Hence the current study is the 1st study tried to assess the effect of V.C supplementation as an antioxidant

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in management of psoriasis in addition to traditional treatment with NB-UVB in group of Iraqi patients.

Patients and methods:

A total 74 patients of both gender were included in this study. All patients were randomly selected from AL-Sadr Medical city , department of Laser research in AL-Najaf City during the period from January/2017 to January/2018,after the agreement of ethical committee in the medical college of Kufa University. Patients were assigned randomly into two groups , the first group included (38) patients and second group included(36) patients who received NB-UVB without and with V.C (500) mg twice a day for 12 weeks, respectively.

*Inclusion criteria***:**

Patients with optimum nutrient intake with clinically proved to have chronic moderate to severe psoriasis , aged ≥ 20 years, of both genders were included with no co morbid illness or any medications.

*Exclusion criteria***:**

Patient was excluded from the study if he/she had one or more of the following criteria: Currently on other modality of treatment, history of chronic systemic diseases, Obese, (BMI≥ 30 kg/m^2) ,Smoker and patients with other skin diseases. Detailed history and physical examination were done for participants. (PASI) score were assessed and 5ml of blood samples were collected from each patient before and after treatment and the serum levels of V.C, GSH and MDA were investigated using (ELISA) kits.

The statistical analysis was performed using the statistical package for social sciences (SPSS) version 25, appropriate statistical tests and procedures applied accordingly.

FINDINGS

Patients were almost matched regarding their baseline characteristics; age, gender, family history, and duration of their disease before start treatment. The changes in the studied parameters including V.C, Glutathione (GSH), Malondialdhyde (MDA) and Psoriasis Area and Severity Index (PASI) are shown in (Table 1):

Serum Vitamin C levels of studied groups

There was a significant increase in serum Vitamin C level after treatment in NB-UVB+V.C group as compared to its baseline level (P<0.001). While in NB-UVB only group there was an insignificant decrease in serum V.C levels as compared to its baseline level(P>0.05). On the other hand, the mean level of serum vitamin in C NB-UVB+V.C group after treatment was significantly higher than that of NB-UVB only group , (P<0.001) and the effect size was large , (1.29) .

Glutathione levels of studied groups

There was a significant increase in serum GSH level after treatment in (NB-UVB + V.C group) than its baseline level (P<0.001). While in(NB-UVB only group) there was a significant decrease ,(P<0.001), that lead to a significant difference between the studied groups in GSH levels after treatment (P<0.001) , with a large effect size of (1.94).

Malondialdhyde (MDA) levels of studied groups

A significant decrease in serum MDA level after treatment in NB-UVB + V.C group than its level before treatment(P<0.05), While in NB-UVB only group there was a significant increase in serum MDA level , (P<0.05), with a significant difference and a moderate effect size of (0.68).between the studied groups in MDA levels after treatment (P<0.05)

Psoriasis Area and Severity Index (PASI)

A significant reduction in PASI score after treatment as compared to its value mean before treatment in both groups (P<0.001).While the difference between both groups in PASI score after treatment was statistically insignificant (P>0.05) and the effect size was small (0.30).

Table 1. Changes and comparison of V.C, GSH, MDA and PASI score of the studied group before and after treatment

Mean		NB-UVB only (n = 38)		NB-UVB+V.C (n = 36)		Effect size	P. value between groups
		(SD)	Mean	(SD)			
Serum Vitamin C	*Before treatment*	2449.37	1084.3	2112.78	834.16		0.14
	After treatment	1907.98	1242.04	3233.36	808.27	1.29	< 0.001
P.value within group		0.161		< 0.001			
Serum GSH	*Before treatment*	68.90	25.56	61.47	32.77		0.29
	After treatment	48.03	25.86	97.03	26.04	1.94	< 0.001
P.value within group		< 0.001		< 0.001			
Serum MDA	*Before treatment*	336.48	241.63	442.73	395.54		0.16
	After treatment	394.35	298.18	237.73	148.51	0.68	0.005
P.value within group		0.001		0.005			
PASI score	*Before treatment*	19.61	6.75	20.54	7.02	-	0.59
	After treatment	11.12	6.07	9.15	6.92	0.3	0.21
P.value within group		< 0.001		< 0.001			

Correlation between the changes in vitamin C, GSH, MDA ,PASI score and the demographic variables of the studied groups

As shown in table.2 , the bivariate Pearson's and Spearman's correlation tests were applied in each group to assess the correlation between the changes in each of vitamin C, GSH, MDA ,PASI score from one side and the demographic variables from the other side, the bivariate correlations were statistically insignificant for all of the 4 parameters, in both studied groups, in all correlations, (P>0.05), (Tables 2 and 3)

Table.2. . Correlation between demographic variables and changes in V.C, GSH, MDA and PASI score of patients in NB-UVB only group

Parameter	Correlation measure	Age	Duration	Gender	Family history
VC	*R*	0.40	0.26	-0.04	-0.39
	P. value	0.10	0.29	0.87	0.11
GSH	*R*	0.01	0.06	0.37	-0.32
	P. value	0.97	0.81	0.13	0.20
MDA	*R*	-0.30	-0.01	0.42	0.20
	P. value	0.23	0.97	0.08	0.43
PASI score	*R*	0.04	0.26	-0.34	-0.35
	P. value	0.88	0.30	0.17	0.16

R : Correlation coefficient

Table 3. Correlation between demographic variables and changes in V.C, GSH, MDA and PASI score of patients in NB-UVB+V.C group.

Parameter		Variable			
	Correlation measure	Age	Duration	Gender	Family history
Vitamin C	*R*	0.26	0.26	0.21	0.19
	P. value	0.28	0.29	0.30	0.45
GSH	*R*	0.07	-0.39	0.11	0.06
	P. value	0.79	0.10	0.64	0.81
MDA	*R*	0.17	0.22	0.03	0.20
	P. value	0.50	0.37	0.90	0.41
PASI score	*R*	0.13	0.12	0.03	0.17
	P. value	0.59	0.62	0.92	0.48

R : Correlation coefficient

Inter-correlation between V.C, GSH, MDA and PASI Score after treatment in NB-UVB+V.C group.

A statistically significant positive correlation had been found between the vitamin C and GSH level P = 0.001, a significant inverse correlation between VITAMIN Cand MDA P = 0.001. There was a weak insignificant inverse correlation between GSH and MDA (P>0.05). PASI was insignificantly correlated with VC, MDA and GSH, (P>0.05), (Table 4).

Table 4.Correlation between Vitamin C, GSH, MDA and PASI score after treatment of patients in NB-UVB+V.C.

Parameter	Correlation measure	Vitamin C	GSH	MDA
GSH	*R*	0.608		
	P. value	0.001	.	
MDA	*R*	-0.655	-0.059	
	P. value	0.001	0.78	.
PASI score	*R*	-0.103	-0.064	0.392
	P. value	0.623	0.761	0.052

DISCUSSION

In the present study there was a significant increase in serum V.C levels in (NB-UVB +V.C) group because of V.C supplementation and a non-significant decrease in V.C levels in NB-UVB only group this is because of it is the major water-soluble antioxidant found in extracellular and intracellular compartments, so it is important factor in skin and because of its high level than other anti-oxidants and the concentrations are elevated in epidermis than dermis, this may give it reluctance to UVB irradiation unlike other anti-oxidants that can affected by UVB irradiation [8]. In the present study we found a weak negative insignificant correlation between V.C and PASI score, unlike a study done by Tampa et al.,[9] who revealed a significant negative relationship between vitamin C and PASI score in patients with active disease. V.C has important role in development of psoriasis, some studies showed that psoriasis associated with low vitamin C concentrations because of the generation

ROS in psoriasis [9,10].There are no information to support current results on the effect of V.C in psoriasis patients.

Regarding serum GSH The results of these study are supported with a study done by Waly et al.,[(6)]. thiols, and total antioxidant capacity, (TACwho reported that adequate dietary intake enriches with V.C lead to increase in the plasma GSH levels in which there is positive correlation between them. Lenton and his co-workers [11] after 13 wk of vitamin C supplements (500 or 1000 mg/ dreported that V.C supplementation was highly effective in increasing GSH level in blood plasma and WBC. Our study demonstrated that there is direct correlation between V.C and GSH as supplementation of V.C is an indirect way to increase serum GSH levels because of V.C acts as a co-factor for (GSH enzymes) that required for GSH functions to maintain them in active state[12]. Unlike in NB-UVB only group in which GSH level was significantly decrease, this is because of the ability of GSH to directly get rid of free radicals and to act as a co-substrate to the glutathione peroxidase GSH-Px enzyme that catalyzed reduction of oxidative stress, makes GSH to have important role in defense mechanisms against oxidative stress [13]. So this decreases might be attributed to breakdown in scavenger process due to UVB enhance free radical formation[14] and probably due to the disease activity itself as it is considered oxidative stress condition that consume GSH in psoriatic patients[15] .Also our finding suggested insignificant correlation between GSH and PASI score, this in concordance with a previous study that found no correlation between PASI score and GSH levels[16)].

Regarding serum MDA: The results of this study are in agreement with a previous studies that found vitamin C supplementation significantly reduced MDA values in case of oxidative stress conditions[17,6].Other studies showed a significant inverse relation between malodialdhyde and vitamin C levels and documented that lack in vitamin C could result in inadequate defense against free radicals which lead to more peroxidation in lipids[18,6]. In the present study the reduction in the level of MDA during supplementation with vitamin C due to role of ascorbate as a one of the most important plasma antioxidant, it plays an essential role in keeping plasma lipids from oxidative damage induced via free radicals [19],similar concept also adopted in an earlier study was conducted by Pujari et al.,[5] who suggested that intake of V.C could reduce the risk of psoriasis. In the current study there was insignificant weak negative correlation between MDA and GSH that disagree to a study done by Jaswal et al.,[20]. Furthermore our results revealed that MDA level was insignificantly related to PASI score in (NB-UVB +V.C)group this in agreement to a previous study done by Abdel-Mawla *et al.*,[(21)]and disagree to a study done by Attwa and Swelam [22].while in NB-UVB only group in which MDA levels was significantly increase might be due to the effect of UVB irradiation because it is capable of inducing lipid peroxidation and impairment of anti-oxidant defense system [23].

Conflict of Interest : None

Source of Funding: Self-funded

Ethical Clearance: The study protocol approved by the Council of the Collage of Medicine University of Kufa and the department of physiology. All the official agreement were obtained from the Health directorate and the Ethical committee of Najaf Health directorate, Training and Researches Center. Informed consent signed obtained from each individual patient before enrollment and all were informed about the nature and the main objective of the study, Participants' data were kept confidentially and used merely for the purpose of the study, and patients data were collected in accordance with the Helsinki declaration.

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DOI Numher: 10.5958/0976-5506.2018.01373.6

Analysis of the Stressor and Coping Strategies of Adolescents with Dysmenorrhoea

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ABSTRACT

Introduction: Every woman has a different menstrual experience. However, many encounter menstruation alongside disorders that cause discomfort, such as pain felt during menstruation called dysmenorrhoea. One of the factors that influence the occurrence of primary menstrual pain is the psychological factor of stress.

Objective: This study aimed to identify the strategies used to overcome dysmenorrhoea in young women.

Method: This study used a cross-sectional design and a simple random sampling technique. The calculation result involved 132 samples. The independent variables were personal stressors, environmental stressors, and coping strategies. The dependent variable was dysmenorrhoea. The data was collected using a questionnaire that was tested for validity and reliability. The analysis used a multiple linear regression test with a significance level $\alpha \leq 0.05$.

Results: The results showed that the personal stressors related to the age aspect were associated with dysmenorrhoea (p=0.002), and that the age of menarche was associated with dysmenorrhoea (p=0.023). Environmental stressors within the aspect of workload had a correlation with dysmenorrhoea (p=0.009), and interpersonal relationships had a correlation with dysmenorrhoea (p=0.015). Coping strategies, particularly emotionally-focused coping also had a relationship with dysmenorrhoea (p=0.019).

Conclusion: Biological age and age of menarche are two of the causes of personal stress for young women. Academic stress is also one of the highest causes of stress in adolescent girls. The demands of academic achievements, interactions with peers, bad teachers and pressuring parents can result in adolescents experiencing stress, resulting in the physical health effect of dysmenorrhoea during menstruation. If adolescents cannot find a good method coping, the risk of dysmenorrhoea will be higher.

Keyword: *adolescent, dysmenorrhoea, stressor, strategy coping.*

INTRODUCTION

Menstruation is a period of blood flowing from the uterus through the cervix and discharging through the vagina. A menstruation cycle begins on the first day of menstruation and continues for, on average, 8 days. Normally, it is estimated to be around 21 to 35 days[1]. Menstrual disorders can occur at different ages. This particular disorder occurs more often in early puberty[2]according to the survey result that many students still didn't know how to decrease dismenore. This research used pre experiment method with the one group pretest-posttest design. The research population was all of the XI class student at Kediri High School 5 whom got dismenore at April 2016. The sample was 16 respondent which taken by accidental sampling. Primary data which is got from dismenore pain measurement at teenager which is done before giving the dark chocolate (pre test. Every woman has a different menstrual experience; many encounter menstruation accompanied with disorders causing discomfort such as pain felt during menstruation in the form of dysmenorrhoea[3]. Dysmenorrhoea is one of the most common

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gynaecological disorders, characterised by pain that is localised in the inferior quadrant of the abdomen and spread through the inner thigh[4]. There are two types of dysmenorrhoea; primary and secondary dysmenorrhoea. Primary dysmenorrhoea usually happens when the individual is younger than 20 years old and there is no correlation with other gynaecological disorders, while secondary dysmenorrhoea happens after the age of 20 years old and correlates with pelvic disease[3].

The WHO data in 2016 showed that incidence rate was 1.769.425, meaning that 90% of women experience dysmenorrhoea and around 10-15% experience severe dysmenorrhoea. Primary dysmenorrhoea often occurs in more than 50% of women and 15% of them experience severe pain. According to the Indonesian Ministry of Health (2010), primary dysmenorrhoea is experienced by 60-75% of young women. One of the factors which influences primary dysmenorrhoea is stress. The cause of stress in adolescents can originate from the inner or outer self. For example, an abundance of academic demands such as tests and assignments, stress because of the high achievement-related demands from their parents, or from the surrounding environment such as inconvenient classrooms and the school itself [5].

One of the factors influencing primary menstrual pain is the psychological factor of stress. If adolescents are not able to choose the right coping strategy to deal with the stress that they encounter, the perceived dysmenorrhoea will be stronger. The purpose of this study was to identify the stressor relationships and coping strategies related to dysmenorrhoea in adolescents.

METHOD

This study was a descriptive research study that used a cross-sectional design. The sample in this research consisted of 132 female students at Junior High school 29 in Surabaya utilising simple random sampling. The independent variables of the research included personal stressors (people, menarche time, menstrual duration, and menstrual cycle), environmental stressors (workload and interpersonal relationships) and coping strategies. The dependent variable was dysmenorrhoea. The instruments used in the collecting data were a questionnaire for measuring the involved stressors and the 'Ways Coping Questionnaire' from Lazarus & Folkman 1984 for their chosen coping strategy[6]. The data analysis used in this research utilised a multiple linear regression test with a significant level of $\alpha<0.05$.

RESULTS

Table 1. Respondent Demographic Characteristics (n=132)

Respondents' Characteristics	Criteria	f	%
Age	13 Years old	69	52.3
	14 Years old	50	37.9
	15 Years old	13	9.8
Menstruation Disorders	Pain	132	100
	No pain	0	0
Family History	Yes	71	53.8
	No	61	46.2
Previously experienced dysmenorrhoea	Yes	95	71.9
	No	37	28.1
Dysmenorrhoea disorders	Nausea	0	0
	Dizzy	0	0
	Vomit	0	0
	Lower stomach pain	132	100
Dysmenorrhoea Treatment	Sleep	87	65.9
	Taking medicine	17	12.9
	Listening to Music	28	21.2
Menarche age	<12 Years old	34	25.8
	12 Years old	62	47.0

Cont.... **Table 1. Respondent Demographic Characteristics (n=132)**

	>12 Years old	36	27.3
Menstruation Duration	<7 days	27	20.5
	7 days	81	61.4
	>7 days	24	18.2
Menstruation Cycle	<22 days	55	41.7
	22-35 days	54	40.9
	>35 days	23	17.4

Multiple Linear Regression Test of the Stressors and Coping Strategies in Female Adolescents with Dysmenorrhoea

Table 2. The Correlation between Stressors and Coping Strategies in Female Adolescents with Dysmenorrhoea at Junior High School 29, in Surabaya in July 2018

Sub Variables	**Category**	**F**	**%**	***p***
Age	13 Years old	69	52.3	
	14 Years old	50	37.9	0.002
	15 Years old	13	9.8	
Menarche age	<12 Years old 12 Years old >12 Years old	34 62 36	25.8 47.0 27.3	0.023
Sub Variables	**Category**	**F**	**%**	***p***
Environmental Stressor				
Workload	Low	28	21.2	
	Intermediate	101	76.5	0.009
	High	3	2.3	
Interpersonal Relationship	Low Intermediate High	8 98 26	6.1 74.2 19.7	0.015
Sub Variables		**F**	**%**	***p***
Strategy Coping				
Emotion-Focused Coping (EFC)				
		84.8	0.019	
112				

This study found that stressors and coping strategies had a significant correlation in association with adolescents with dysmenorrhoea. Personal stressors within the aspects of biological age and menarche age had a significant relationship with the occurrence of dysmenorrhoea. As seen in Table 2, the value of menarche age and age was 0.002 and 0.023, which means that p <0.05. Environmental stressors with the workload aspect and interpersonal relationship aspect had a significant relationship with dysmenorrhoea in adolescents. It also had a *p*-value of 0.009 and 0.015, which equals $p<0.05$. Coping strategy within the *emotion-focused*

coping (EFC) aspect had a significant correlation with incidences of dysmenorrhoea in adolescents with a value of *p emotion-focused coping* (EFC) 0.019, equal to $p<0.05$.

DISCUSSION

Personal Stressors of Female Adolescents with Dysmenorrhoea

The age of adolescents is one of the factors of dysmenorrhoea incidence. The older the age of the woman, the more that the incidence of dysmenorrhoea will decrease with reduced uterine nerve function due to aging. The majority of the study respondents were female students aged either 13-14 years old, so the research respondents were classified as early adolescents. Dysmenorrhoea is often experienced in adolescence because in adolescence, the reproductive organs do not quite function properly and are susceptible to stress if coping has not been constructed. Thus, there is a significant relationship between age and dysmenorrhoea. Susanto, et. Al. (2008) research in Makassar city showed that the most common age group suffering from dysmenorrhoea disorder was between 13-15 years old[7].

Adolescence is a period in the interval of 10-19 years old. Adolescent age limits are categorised into 3 age groups, namely early adolescents (aged 12-15 years old), middle adolescents (ages 15-18 years old), and late adolescents (18-21 years old). In adolescents aged 13-14 years old, anxiety will increase when hormonal changes occur that cause discomfort. If on the contrary this anxiety is allowed to linger, then the psychological adverse effects of this anxiety results in stress, in turn resulting in physical disorders including dysmenorrhoea[1].

Menarche age has a significant correlation to incidences of dysmenorrhoea. This is evidenced by some of the respondents experiencing rapid menstruation at an age younger than 12 years old. Menarche age is one of the factors that causes dysmenorrhoea. Research from Sophia, *et al*. (2013) stated that there is a correlation between the age of menarche and dysmenorrhoea. Menarche at a younger age has a higher risk of the incidence of primary dysmenorrhoea compared to women with a menarche age that is older than 11 years old[8].

Menarche is the first menstruation experienced by female adolescents, which is the sign of sexual maturity, although the reproductive system is not completely developed until 1-1.5 years after menarche. Menarche usually starts at the age of 9-12 years old, and there is a small percentage who experience it later than the age of 13-15 years. Since menarche is initiated, women will continue to experience menstruation throughout their lives, every month until they reach the age of 45-55 years, which is commonly called menopause[2]according to the survey result that many students still didn't know how to decrease dismenore. This research used pre experiment method with the one group pretest-posttest design. The research population was all of the XI class student at Kediri High School 5 whom got dismenore at April 2016. The sample was 16 respondent which taken by accidental sampling. Primary data which is got from dismenore pain measurement at teenager which is done before giving the dark chocolate (pre test. Menarche at a younger age involves a higher risk of dysmenorrhoea compared to women who experience menarche at an age older than 11 years old. Factors such as hereditary health, food, and health as a whole can accelerate or inhibit the incidence of menarche[8].

Students who start menstruation at the age of ≤ 12 years old will have a higher risk of experiencing a dysmenorrhoea than students who menstruate at the age of 13-14 years old. The earlier menarche age (≤ 12 years) is where the reproductive organs have not developed optimally and as there is still a narrowing of the cervix, there will be pain during menstruation. This happens because the woman's reproduction system is not yet functioning fully.

Environmental Stressors on Female Adolescents with Dysmenorrhoea

Having an overloading workload is one of the factors of dysmenorrhoea incidences. This is proven by 5 respondents who considered doing too much schoolwork to be a very burdensome workload. In addition, 105 respondents considered final semester examinations and bad grades during the exams themselves to be a burdensome workload. A total of 37 respondents said they had never experienced dysmenorrhoea before and that in the exam period, they had dysmenorrhoea. A workload considered to be a burden can cause a significant relationship between workload and incidences of dysmenorrhoea.

The academic workload on adolescents is predominantly assignments and tests. Baumel (2000 in Nglai, 2008) stated that stress in relation to academics in children arises when expectations for their academic achievement increases, from parents, teachers and their peers. This stress increases every year, along with the age-related demands of talented and accomplished children, which will never stop. Stress is a physiological, psychological and human behavior response that tries to adapt and regulate both internal and external stressors. One of the effects from stress is experiencing dysmenorrhoea during menstruation. This can be related to a disturbance in endocrine activities, which raises the prostaglandin level[9].

Diana Sari's (2015) research on female students in Yogyakarta stated that mild primary dysmenorrhoea is most often experienced by the respondents who experienced mild stress. The respondents who experienced severe dysmenorrhoea were the respondents who experienced severe stress[3]. Katwal PC et al (2016) stated that adolescents with dysmenorrhoea can find that it affects their academic and social performances, and sporting activities[10]conducted from 1st Dec. 2012 to 31st Jan. 2013. The study was conducted in Kathmandu University School of Medical Sciences. A total of 184 participants consented for this study and each one was given a questionnaire to complete. This study included only unmarried nulliparous, healthy (all through first to final years.

Interpersonal relationships were one of the biggest factors related to triggering a stress in adolescents which can cause them to suffer from a biological disorder such as dysmenorrhoea during menstruation. This was proven by 23 respondents who said 'unable' in relation to helping others, working together and supporting one another to complete tasks in a group, as well as resolving conflicts with friends within group assignments. A total of 6 people stated "unable" on the matter of communicating well and being polite towards their parents. This inability caused a significant correlation between interpersonal relationships and dysmenorrhoea.

An interpersonal relationship is a relationship that consists of two people or more who are dependent on each other and who use a consistent interaction pattern. In the school environment, female students have high academic demands but at the same time, they must be able to socially interact and establish good relationships with others, such as with other students, between students and other school members in relation to both verbal and nonverbal communication methods. Ernawati (2015) stated that the higher the support received by the students, the lower the stress that the students had, and vice versa; the lower the social support received by the students, the higher the stress of the students[11]. More family and social support allowed the adolescents have higher self-esteem and a more optimistic perspective. Therefore, it makes the students more capable of dealing with their problems, since social interactions are one of the factors influencing stress in students[12].

There are some who are unable to interact with their friends because they feel inferior, have internal conflicts and who cannot solve problems with their friends. Some are even unable to communicate well with their parents because their parents are divorced, dead or work outside the city. This is considered by adolescents to be a stressor, and causes adolescents to experience stress which will later cause pain during menstruation caused by endocrine disruption.

Strategy Coping in Female Adolescents with Dysmenorrhoea

Emotion-Focused Coping (EFC) has a significant correlation with dysmenorrhoea. It has been proven that the majority of respondents chose emotion-focused coping as their chosen coping strategy when experiencing dysmenorrhoea. This is supported by Taufik's (2013) research, which stated that women are more likely to use emotion-focused coping as they tend to regulate their emotions when dealing with sources of stress[13].

A coping strategy is a coping method used by individuals when handling the demands of life. A coping strategy consists of two categories, according to Lazarus & Folkman's theory (1984), namely Problem-Focused Coping and Emotion-Focused Coping. The factors that influence the use of coping strategies include health, problem-solving skills, positive self-esteem, social and economic support[7].

A coping strategy that focuses on emotion or EFC will be susceptible when encountering dysmenorrhoea during the menstruation. This is because EFC tends to avoid the problem that is being experienced. When individuals avoid problems that make them experience stress, the problems that they face will be greater and so the stress will increases. Young women must choose

their strategy coping wisely in order to reduce the risk of dysmenorrhoea. When an individual can adapt themselves to the change that they experience due to an obtained stressor, then an individual has the ability to face both positive and negative stimulation.

CONCLUSION

Adolescents with dysmenorrhoea needs structural approach from school and family. Focusing on biological age, menarche age and strengthening coping strategy may be benefits to reduce the severity of dysmenorrhoea.

Ethical Clearance: This study has passed the institutional review board from Faculty of Nursing, Universitas Airlangga, Surabaya number 966-KEPK.

Source of Funding: This study is self-funded research project.

Conflict of Interest: None.

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DOI Numher: 10.5958/0976-5506.2018.01374.8

Cranial CT Scan and Sonographic Finding in Term and Preterm Newborn

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ABSTRACT

Objective: to assess the CT scan and sonographic findings in term and preterm newborns **Method**: A total of 52 neonates who were referred to radiology department and those admitted to neonatal intensive care unit, **Findings:** Ultrasound revealed equal number of newborns with normal and abnormal findings, 26 for each, while the brain CT revealed abnormal findings in 31 represented almost (60%) of newborns, the overall agreement between ultrasound and CT was good (percent agreement = 82.7%, Kappa = 0.654). in detection of Asphyxia, the was very good, (percent agreement =90.4%, Kappa = 0.81), for intracranial hemorrhage (ICH), moderate in intraventricular hemorrhage (IVH) and good in germinal matrix hemorrhages (GMH). However, the agreement between ultrasound and brain CT in total number of detected lesions among the studied group was good, (percent agreement = 86.5%, kappa was 0.802). Conclusions: Cranial CT scan and ultrasonography are good modalities in detection of brain abnormalities in term and preterm neonates and there was a good agreement between the two modalities brain abnormalities for either the number of lesions, or the specific pathology.

Keywords*: Term neonates, preterm neonates, Cranial CT scanning, Cranial ultrasonography, intraventricular hemorrhage, intracranial hemorrhage.*

INTRODUCTION

Neonatal intracranial hemorrhagic and hypoxic injury can be isolated as those happening in the preterm and in the term newborn children. In the preterm, the significant sores are germinal lattice discharge (GMH)/ intraventricular drain (IVH) and periventricular leucomalacia (PVL) [1, 2]. In the term newborn children the real issues are hypoxic-ischemic encephalopathy/ damage (HII) and intracranial hemorrhage [3, 4] Intracranial hemorrhage is unprecedented in term newborn children and when it happens is by and large inconsequential to the germinal matrix[5]. Ultrasonography (USG), processed computed tomography CT) and magnetic resonance image (MRI) are being routinely used to screen the neonate for plausible intracranial problems [(6-9)] The benefits of USG are that it is effectively accessible, modest, speedy and simple to perform and should be possible at the bedside. Additionally, it doesn't utilize ionizing radiation. In any case, sonography does not separate subarachnoid from subdural hemorrhages and it is additionally far-fetched that a little cortical discharge will be detected [10]. It is moderately heartless to change in cerebrum tissue perfusion and to intense HII [11, 12]. The benefits of CT incorporate its simple accessibility and high spatial determination. CT gives incredible anatomic determination of the whole cerebrum parenchyma. Likewise, it isn't administrator subordinate, moderately less expensive and can be all the more quickly executed when contrasted with MRI. CT scan dependably recognize amongst subdural and subarachnoid hemorrhage, which is troublesome on sonography [10]. Anyway in untimely babies the part of CT for the documentation of intense hypoxic ischemic brain damage is constrained. High water substance of the untimely brain blocks the utilization of diminished lessening as a record of cerebral edema. CT contributes

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fundamentally to add up to radiation dosage got from therapeutic imaging in kids. Cranial ultrasound (cUS) is a promptly accessible, convenient and by a wide margins the most basic first line system of intracranial imaging in neonates with suspected intracranial discharge. It uses the fontanelles of neonates as a sonographic window to get constant, auxiliary appraisal of the intracranial substance. cUS is especially significant for evaluating the ventricular framework and periventricular white matter, with amazing between onlooker understanding for germinal network discharge GMH) or intraventricular discharge (IVH) and cystic periventricular leukomalacia PVL) [11]. cUS has a few critical constraints: its dependence on acoustic windows implies that discharge in the districts of the mind's convexity, (for example, subdural or subarachnoid discharge) might be missed. cUS additionally has low affectability for distinguishing pathology in the back fossa, in spite of the fact that use of supplemental acoustic windows for example, the mastoid fontanelle, is useful [13,14] . The present study aimed to assess the cranial CT scan and sonographic findings in term and preterm newborns to identify the brain abnormalities that detected in each modality.

METHOD

A prospective clinical study conducted during the period fom October 2017 to August 2018, in Al-Hilla maternity and pediatrics Teaching hospital. A total of 52 neonates were prospectively selected in the department of radiology and consecutively entered in the study after obtaining of their caregiver (parents , or relative) consent to participate their neonates in the study. Cranial ultrasonography and CT was performed by specialists radiologist and resident physician in the radiology department (the researcher), with no additional charges to the family. Neonate was excluded from the study if he/she had congenital CNS anomalies and malformation, documented infections or tumors, also when ultrasonography could not performed within 24 hours after CT scanning by the radiologist the neonates excluded. The ultrasonography images were reviewed by the specialist radiologist and the researcher looking for echogenicity, and other signs of abnormalities, and clinical readings were reported. The ultrasonography was performed by or under the direction of the specialist radiologist. The corresponding CT scanning images were evaluated later by the same radiologist . Images were assessed looking for the following abnormalities : germinal matrix hemorrhages (GMH) including IVH and parenchymal extension; non-matrix related hemorrhage, periventricular leukomalacia and other related findings. Data management and analysis were perfomed using the statistical package for social sciences, version 25 and appropriate statistical tests and procedures were applied accordingly. Kappa statistics were applied and the Cohen's kappa coefficient (κ) was calculated for the agreement between ultrasound and CT scanning in detection of abnormalities.

FINDINGS

There were, 46 (88.5%) term and 6 (11.5%) pre-term neonates. Male to female ratio was almost 2.5. Age ranged (1 – 8) days (Table 1).

Figure 2 shows the distribution of the studied group according to the sonographic echogenisity; normal echogenisity was reported in 30 neonates (57.7%), hyperechoic in 18 (34.6%) and hypoechoic in only 4(7.7%).

Overall Agreement between ultrasound and brain CT was good in detection of abnormal findings (kappa = 0.654), agreement was very good (kappa = 0.81) in detection of Asphyxia, good in detection of ICH (kappa = 0.624), moderate in IVH (kappa = 0.562) and good agreement in detection of GMH, (kappa = 0.689), Agreement was very good for the detection of total number of brain abnormalities, (kappa was 0.802).

Table 1. Age and gender distribution of the studied group (N = 52)

		No.	%
Gender	Male	37	71.2
	Female	15	28.8
Age (day)	One	8	15.4
	Two	15	28.8
	Three	7	13.5
	Four	6	11.5
	Five	8	15.4
	More than five	8	15.4
	mean ± SD	3.44 ± 2.01	-
	range	1 – 8	-
SD: standard deviation			

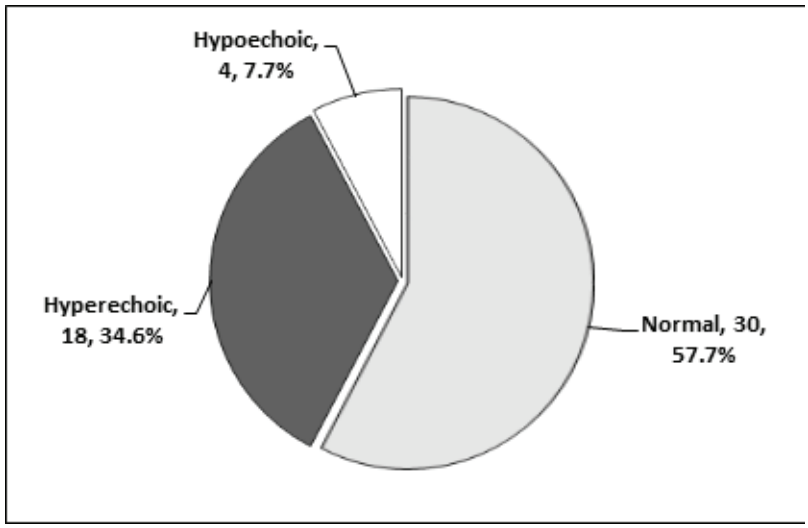

Figure 1. Distribution of the studied group according to the sonographic echogenisity

Table 2. Agreement between ultrasound and brain CT in detection of overall normal and abnormal findings of the studied group (N = 52)

	Finding	**Brain CT**		**Total**
		Normal	**Abnormal**	
Ultrasound	Normal	19	7	26
	Abnormal	2	24	26
Total		21	31	52
Percent agreement 82.7%, Kappa = 0.654 (good agreement)				

Table 3. Agreement between ultrasound and brain CT in detection of abnormal brain finings

Detected pathology	**Percent agreement**	**Kappa**
Asphyxia	90.4%	0.81 (very good)
ICH	80.8%	0.624 (good)
IVH	78.8%,	0.562 (moderate)
GMH	84.6%	0.689 (good)
Overall total number of lesions	86.5%	0.802 (very good)

DISCUSSION AND CONCLUSION

The present study assessed the CT scan and sonographic findings in 52 term and preterm newborns who were recruited from those referred to radiology department and those admitted to neonatal intensive care unit , the majority , (88.5%), of the studied newborns were term neonates and only 11.5% were preterm, this findings consistent with the epidemiological characteristics of the incidence of preterm births; according to the World Health Organization (WHO) reports, In the present study, generally, Ultrasound revealed equal number of newborns with normal and abnormal findings, 26 for each , while the brain CT revealed abnormal findings in 31 newborns represented almost 60% of newborns,

despite the CT detected more abnormal findings, the agreement between ultrasound and CT was good (percent agreement = 82.7%, Kappa = 0.654). In detection of specific pathologies, the agreement between ultrasound and brain CT varied in different pathologies, in detection of Asphyxia, the agreement between ultrasound and brain CT was very good, (percent agreement =90.4%, Kappa = 0.81), for ICH agreement was good (percent agreement = 80.8%, kappa = 0.624), in detection of IVH, ultrasound and brain CT moderately agreed (percent agreement =78.8% , kappa = 0.562). Good agreement was found between ultrasound and brain CT in detection of GMH (percent agreement = 84.6% , kappa = 0.689). However, the agreement between ultrasound and brain CT in total number of detected lesions among the studied group was good, (percent agreement = 86.5%, kappa was 0.802), these findings indicated that ultrasound is a good investigation in suspected neonatal cases of brain lesions. Recently, Bano et al [15] documented that cranial ultrasound had a crucial role in detection of PVL and intracranial hemorrhage with good sensitivity and specificity compared to CT. From other point of view, CT is less sensitive and specific than MRI . However, in very sick neonates, CT could be used without need for sedation, but the exposure to radiation may limit this advantage, on the other hand, cranial ultrasound, has some limitations in comparison to CT; as it is lower sensitive for detection of cortical lesions, operator dependent and has some inter-observer variability, nonetheless, cranial ultrasonography, is a non-invasive, relatively low cost and can performed at bed-side, this is very important advantage in unstable or very premature neonates, as well as, it is suitable for screening and follow-up examination[16–18] .

Findings of the present study also consistent with previous studies conducted in the last years; Blankenberg et al. [16] in their comparative study in 2012 concluded no significant difference in either the number of findings observed or interobserver agreement between songraphy and CT in diagnosis of PVL , additionally, higher kappa value and agreement had been found in earlier study done by Pinto-Martin et al. in 2004 [19].

On the other hand, recently, Girard et al. (2018) documented that ultrasound had good agreement with CT and still the primary method of imaging to assess brain lesions particularly in preterm newborns [20] .

In contrary, an earlier previous retrospective study included 72 newborns, found that CT and MRI imaging had significant advantage over ultrasound, for the detection of intracranial ischemia and hemorrhage [21]. In another study was conducted in 2010 in India, Khan et al.[22] concluded that ultrasound is better modality for imaging preterm neonates with suspected IVH or PVL but is unreliable in the imaging of term newborns with suspected ICH.

The discrepancy in the findings of different studies could be attributed to the differences in the study design nature, time elapsed to perform ultrasound and the sample size in different studies, however, in the present study significant number of lesions were detected in both ultrasound and CT scan with very good agreement rate and low inter-observer variation, in addition, the detection of specific lesions was generally good. further studies with longer period can cover this subject and compare the ultrasound and CT in term versus preterm neonates . In conclusions Cranial CT scan and ultrasonography are good modalities in detection of brain abnormalities in term and preterm neonates and there was a good agreement between the two modalities , however, further studies with larger sample size, longer duration are suggested for further assessment and evaluation with particular comparison of the cranial CT and ultrasound findings in term and preterm neonates.

Conflict of Interest Author declared: None

Source of Funding: Self-funded

Ethical Clearance: Data of the participant neonates, were collected in accordance with the Helsinki declaration, Consents of caregiver (parents , or relative) to participate their neonates in the study were obtained. All official agreements and written informed signed consent of each participant were obtained prior to patients enrollment

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DOI Numher: 10.5958/0976-5506.2018.01375.X

Xilem *Pinus merkusii* as Martapura River Water Biofilter

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ABSTRACT

People of South Kalimantan useriver water for their daily needs. Martapura River has a level of contamination of *Escherichia coli bacteria* exceeding the threshold. Xylem conifers can be used as biofilter. *Pine merkusii* is a type of conifer plant that grows in South Kalimantan. The purpose of this study was to determine the differences in the value of MPN and TPC of Martapura river water and pathogenic bacteria before and after filtering treatment with xylem biofilter ofstem *Pinus merkusii*. This type of research is true experimental method in the form of draft *Posttest Only Control Group Design.* The research material used was xylem fromstem *Pinus merkusii* from pine forest in Banjarbaru and Pinus Banjar Regency. The research sample is the Martapura River water. The independent variable is Xilem stem *Pinus merkusii*. The dependent variable is the decrease in MPN coli feces, river water TPC anddissolved water *Klebsiella pneumonia, Pseudomonas aerogenosa*. The data obtained were tabulated and statistically analyzed by independent T test. MPN coli examination results of river water stools before and after treatment on average ≥ 2400/100 ml. TPC results of river water before treatment 5348 CFU /ml after treatment 9103 CFU / ml. TPC results of water dissolved by *Klebsiella pneumonia* before treatment 9724 CFU / ml, after treatment of 0 CFU/ml. TPC results ofdissolved water *Pseudomonas aerogenosa* before treatment 6988 CFU/ml, after treatment of 1202 CFU/ml. The conclusion of the study there were no differences in the results of river water TPC before and after treatment with a significance value of 0.41 (>0.05), there were differences in TPC results of dissolved water *Klebsiella pneumonia* and *Pseudomonas aerogenosa*. with a significance value of 0.000 (<0.05) and with a significance value of 0.01 (<0.05). It is recommended to do research with a different type of xylem.

Keywords; *xilem Pinus merkusii, biofilter, river water*

INTRODUCTION

Indonesia has an average water requirement of 60 liters per capita. The community processes and refines dirty water in rivers, lakes and so on that are generally polluted to meet water needs[1]. Most in developing countries rare surface water sources that meet quality standards for human consumption, many water sources are polluted by human excretion, animal excretion and industrial waste[2].

The scarcity of clean and safe drinking water is one of the main causes of human death in developing countries. Water pollution, the deadliest comes from biological: infectious diseases caused by pathogenic bacteria, viruses, protozoa, or parasites are the most common and widely related health risks with drinking water The most common pathogens carried by water are bacteria (eg *Escherichia coli*, *Salmonella typhi*, *Vibrio cholerae*), viruses (eg adenoviruses, enteroviruses, hepatitis, rotavirus), and protozoa (eg *Giardia*). This pathogen causes child death and also contributes to malnutrition and inhibits child growth[3].

The World Health Organization reports that 1.6 million people die each year from diarrheal diseases due to lack of access to safe drinking water and sanitation basic. 90% of them are children under 5 years of age, especially in developing countries. Some barriers include the prevention of contamination, sanitation and disinfection needed to effectively prevent the spread of waterborne diseases[3].

Indonesia is a developing country covering many

provinces, most still rely on water from river water despite microbiological quality of the river water does not meet health requirements, test results MPN coli in Code River in Yogyakarta, shows the content of the bacterium *Escherichia coli* in which more than 8,000 bacteria / 100ml[4]. The ciliwung river in Jakarta also shows fecal coliform content exceeding the prescribed limit[5]. Martapura River is a large river located in Banjarmasin, South Kalimantan Province, there are still residents of Banjarmasin Defecate (BAB) in the Martapura River causing the level of contamination of *Escherichia coli bacteria to* exceed the threshold[6].

Safe water for drinking water must be free from pathogenic organisms, toxic substances, excessive minerals and the remains of organic substances[2]. Polluted water must be disinfected first, a lot of disinfection is done by the chlorination process after the water is coagulated - flocculation using Aluminum sulfate ($Al_2(SO_4)_3$, 14 H_2O). Chlorine has a high solubility and 700mg / l of water for disinfecting, in general, no harmful effects, such as causing odor, taste and effectively killing bacteria. At *pH dependent chlorine* can cause cancer because it produces tetrahalomethane compounds that can damage the endocrine system[7]. There is a need for tools or materials that are natural that can be used as a natural filter that is safe and easily accessible to the community.

Research conducted by Karnik[8] from the Massachusetts Institute of Technology in Cambridge shows that coniferous xylem can be used as a biofilter. This technique is easy to implement considering the material is easy to obtain, cheap, biodegradable and disposable, can remove bacteria from water with simple filtration based on the pressure of about 3 cm^3 stems can filter water a few liters per day, enough to meet the needs of clean drinking water from one person. These results indicate the potential for plant xylem to overcome the need for pathogen-free drinking water in developing and resource-limited countries. *Pine merkusii* is a type of conifer plant that is widely grown in Indonesia, including in South Kalimantan.

The background above shows the need for xylem research on *Pinus merkusii* as a biofilter on the Martapura River water. The purpose of this study was to determine the difference in the value of fecal MPN coli and TPC martapura river water, dissolved water ofbacteria *Klebsiella pneumoniae; Pseudomonas aeroginosa* before and after filtration treatment with xylem biofilter ofstem *Pinus merkusii*

MATERIALS AND METHOD

This type of research used in this study is actually an experimental method*(trueexperiment)*in the form of draft *Posttest Only Control Group* Design. The research material used was xylem ofstem *Pinus merkusii* .The research material was obtained from pine forests in Banjarbaru and Pinus Island, Banjar Regency. The research sample is the Martapura River water.

The independent variable in this study is Xilem stem *Pinus merkusii*. The dependent variable in this study is the declining value of MPN Coli feces, TPC Martapura river water and dissolved water *Klebsiella pneumonia, Pseudomonas aerogenosa* determination test was *Pinus merkusii* conducted in the laboratory of FMIPA Universitas Lambung Mangkurat. River water sampling was carried out at 6 points with repetition 5 times. The collection uses 5 liters of sterilized jerry cans.

Making xylem of stem *Pinus merkusii* by means of onestem *Pinus merkusii* measuring 20 cm long the outer layer is removed, then cut into pieces with a length of 1 cm and 1.5 cm in diameter.

Identifying Gram-negative pathogenic bacterial species by means of Martapura river water poured in a sterile bottle and taken by one ounce, isolated into agar EMB media and one ole was isolated in Mac Conkey agar media, incubated at 37 C for 24 hours. Observed whether there are colonies that match the characteristics of gram-negative pathogens including *Klebsiella pneumonia, Pseudomonas aerogenosa* . Gram and colony staining were carried out which led to the desired bacterial species followed by biochemical tests, after 24 hours followed by serology tests and VITEX tests performed feces MPN coli and river water TPC before biofilter filter. Prepared a plastic tub covered with existing water faucet in a sterile state, put 5 liters of Martapura River water and connected xylem ofstems *Pinus merkusii* that had been prepared in the container faucet, left for 24 hours for the biofiltration process. Filtered water is stored in a sterile container. Carry out fecal MPN Coli and TPC examination on biofiltration water.

Examination of MPN Coli feces and TPC in dissolved water *Klebsiella pneumonia, Pseudomonas aerogenosa* before and after filtering biofilter. The data obtained

were tabulated and statistically analyzed by independent T test to determine differences in fecal MPN coli, river water TPC, *Klebsiella pneumonia*solution,solution *Pseudomonas aerogenosa* before and after the biofilter process.

RESULTS AND DISCUSSION

The adoption of the Martapura river water was carried out in six (6) points, namely at the upstream of the river, the middle of the river, and downstream of the river. Many samples of each point are 5 liters. A total of 2.5 liters from each point were mixed so that they were homogeneous and used as research samples. The sampling points can be explained in the following table:

Table 1 Sampling Points for River Water

Retrieval Points	Code	Sample Location
1	Hulu	Pasar Astambul
2	Tengah 1	Pondok Pasantren Darussalam
3	Middle2	Sungai Tabuk
4	Tengah 3	Sungai Lulut
5	Tengah 4	Banua Anyar
6	Downstream	of Basirih Bridge

The results of isolation of pathogenic bacteria from samples of Martapura river water were found in two bacteria, *Klebsiella pneumonia* and *Pseudomonas aerogenosa*.

MPN Coli Feces Test Results River WaterTest

Table 2. MPN Coli Fecal

River Water Samples	Examination Results MPN Coli Tinja (MPN/100ml)					Total	Average
	Deuteronomy 1	Deuteronomy 2	Deuteronomy 3	Deuteronomy 4	Deuteronomy 5		
Treatment	≥ 2400	≥ 2400	≥ 2400	≥ 2400	≥ 2400	-	≥ 2400
No treatment (positive control)	≥ 2400	≥ 2400	≥ 2400	≥ 2400	≥ 2400	-	≥ 2400
Standard filter (negative control)	≥ 2400	≥ 2400	≥ 2400	≥ 2400	≥ 2400	-	≥ 2400

TPC River Water Test Results

Table 3. The results of the examination TPC River water

River Water Samples	Examination Results TPC (CFU/ml)					Total	Average
	Deuteronomy 1	Deuteronomy 2	Deuteronomy 3	Deuteronomy 4	Deuteronomy 5		
Treatment	2788	21034	14974	5248	1472	45516	9103
No treatment (positive control)	16688	5248	1104	1924	1776	26740	5348
Standard filter (negative control)	9596	339	401	384	792	11512	2302

TPC Test Results Dissolved Water *Klebsiella pneumoniae*

Table 4. Examination results TPC Suspended Water *Klebsiella pneumoniae*

Dissolved Water Klebsiella pneumoniae	Examination Results TPC (CFU/ml)					Total	Average
	Deuteronomy 1	Deuteronomy 2	Deuteronomy 3	Deuteronomy 4	Deuteronomy 5		
Treatment	0	0	0	0	0	0	0
No treatment (positive control)	7800	9560	9600	11200	10460	48620	9724
Standard filter (negative control)	2	1	1	1	1	6	1

Dissolved Water Test Results *Pseudomonas aerogenosa*

Table 5. TPC Suspended Water Test Results P*seudomonas aerogenosa*

Dissolved Water Pseudomonas aerogenosa	Examination Results TPC (CFU/ml)					Total	Average
	Deuteronomy 1	Deuteronomy 2	Deuteronomy 3	Deuteronomy 4	Deuteronomy 5		
Treatment	780	950	740	1040	2500	6010	1202
No treatment (positive control)	4360	3080	5600	8600	13300	34940	6988
Standard filter (negative control)	600	420	1400	1500	3700	7620	1524

STATISTICAL TEST RESULTS

The equipment used for water disinfection requires several requirements which are the main reference. The requirements put forward by Peter Varbanets[9] there are four (4) namely, first the performance of equipment in terms of the ability to effectively remove pathogenic microbes. Both devices are easy to use, do not require complicated steps for operation and maintenance. All three equipment are sustainable, can be produced locally, use of chemicals that are small and do not use energy consumed. All four devices are generally accepted.

Low-cost water treatment in developing countries generally uses chlorine disinfection, sunlight disinfection, chlorine disinfection with a combination of coagulation, or ceramic filtration[10]. Chlorine used for disinfection is a biocide that effectively reacts with organic substances to produce carcinogenic substances against pathogenic microbes[11].

Disinfection using sunlight based on the principle of ultraviolet light radiation can effectively inhibit *Cryptosporidium parvum* but only for disinfection water with a low turbidity limit. Sunlight is also not effectively used to inhibit viruses. Filtration using ceramic filters is effective for removing pathogenic microbes, but their effectiveness against viruses is low[12].

Research on filtration techniques using pine xylem by Boutilier[3] proved to have been able to filter bacteria. This study also shows that there is a xylem filtering power of *Pinus merkusii* against certain bacteria. The underlying research results are that there are differences in treatment and non-treatment TPC test results in the solution of *Klebsiella pneumonia* and *Pseudomonas*

aerogenosa bacteria, although the results of the river water samples obtained no difference.

Xylem plants are porous materials that regulate the flow of water in plants, from the roots of kepucuk[13]. Xylem pores are small, usually in units of nanometers (nm), this is useful so that water that flows in this small channel does not occur (cavitation)[14].

Pine belongs to the conifer plants, with a sectional stem is composed largely of xylem tissue[3], in contrast to woody trees that have xylem tissue is limited to a part surrounded by bark[13].

Research[3] shows that xylem filters that have been used for filtration, after cutting lengthwise and examined by fluorescence microscopy, there are bacteria that accumulate in xylem pores. Bacteria are found in the xylem filter section with a distance of only a few millimeters from the tip of the solution being inserted.

Particles larger than 100 nm are retained in the xylem filter sieve well. Particles measuring ≤ 70 nm are not retained and pass through the xylem filter[3]. Bacteria *Klebsiella pneumonia* size ≤ 70 nm (2μm x 0.5μm), but this bacteria has a large capsule measuring 160 nm[15] so that it is possible to retain the xylem filter *Pinus merkusii*. Bacteria *Klebsiella pneumoniae* can be found in the human nasoparing and there is also a free environment such as surface water, waste water and soil[16].

Klebsiella pneumonia generally causes pneumonia, usually in the form of bronchopneumonia and also bronchitis. Patients with this infection tend to develop lung abscesses, cavitation, empyema and pleural adhesions. Death rate is around 50% despite antimicrobial therapy. Patients with alcoholism and bacteremia die level increases to 100%[17].

This study shows that xylem *Pinus merkusii* can also filter *Pseudomonas aerogenosa. Pseudomonas aerogenosa* measuring 0.5-0.8 μm x 1.5-3 μm[18] *Pseudomonas aerogenosa* can be found in environments such as soil, water, humans, animals, plants, waste, and hospitals[19]. *Pseudomonas aerogenosa* is an opportunistic bacterium, usually in nosocomial infections in individuals with decreased immunity. Causes of respiratory tract infections, urinary tract, burns, and wounds[18].

CONCLUSION

The average value of MPN coli feces in Martapura river water before and after being filtered with xylem *Pinus merkusii* ≥ 2400/100 ml

The average value of TPC Martapura river water before being filtered with xylemstems *Pinus merkusii* 5348 CFU / ml, after filtering 9103 CFU / ml. There was no significant difference in the TPC value of river water with a significance value of 0.41 (> 0.05)

TPC value in the water dissolved by *Klebsiella pneumoniae* before being filtered with xylem ofstem *Pinus merkusii* 9724 CFU / ml, after filtering 0 CFU / ml. There were significant differences in the TPC value of dissolved water *Klebsiella pneumoniae* with a significance value of 0.000 (<0.05)

TPC value in water dissolved *Pseudomonas aerogenosa* before being filtered with xylem ofstem *Pinus merkusii* 6988 CFU / ml, after filtering 1202 CFU / ml. There are significant differences in the TPC value of dissolved water *Pseudomonas aerogenosa* with a significance value of 0.01 (<0.05)

Gratitude

This research received funding from research training of health personnel in 2015, thus conveyed appreciation for Politeknik Kesehatan Kemenkes Banjarmasin institution and stakeholders.

Ethical Clearance: Taken From *Health Research Ethics Committee* Politeknik Kesehatan Banjarmasin

Conflict of Interest: Nil

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DOI Numher: 10.5958/0976-5506.2018.01376.1

Factors Influencing Health Conservation of Middle-aged Men in Korea

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ABSTRACT

Purpose: The purpose of this study was to examine the relationship among perceived health status, stress, lifestyle habits, self-esteem, self-efficacy, wisdom and health conservation, and to analyze the effects of them on health conservation. **Methods:** Subjects of this research are 134 middle-aged men. Data were collected by using questionnaires which included demographic characteristics, correlated factors and health conservation. Data were analyzed using descriptive statistics, t-test, ANOVA, Pearson's correlation coefficients, and stepwise multiple regression. **Results:** There were significant relationship between health conservation and the following independent variables: stress (r=-.343, p<.001), lifestyle habits (r=.295, p=.001), self-esteem (r=.398, p<.001), self-efficacy (r=.471, p<.001), and wisdom (r=.714, p<.001). The variable affecting the health conservation of subjects was wisdom and explanatory power was 50.7%. **Conclusion**: It is important for middle-aged men to live a wise life in everyday life to preserve their health. Especially, being wise subjects is possible through experiences that have overcome difficulties in their own lives by raising empathy and self-reflection for others, so experts need help them to live a life that can expand and develop these factors.

***Keywords**: Middle-aged men, Health conservation, Stress, Lifestyle habits, Self-efficacy, Wisdom*

INTRODUCTION

According to the Population and Housing Census in 2015, the population was 51,107,000, and due to the persistence of low fertility and aging, the youth population declined and the number of middle-aged and elderly population increased sharply, reaching 482,000, and the median age rose to 41.2.[1] Middle-age is the age group below 40-64 years. This period is the golden age of life with economic stability and mental relaxation unlike early adults where there are freedom and wisdom to reflect on oneself, and physically, through the symptoms of climacterium, changes due to the aging process become prominent, and the limits of human existence are experienced throughout the body. Socially and psychologically, impulse of the new self, the role change in the family, and conflicts and imbalances caused by external environment occur, and people experience the challenge of reflection on their lives and the identity of their self as they worry about depression and death.[2,3]

In particular, middle-aged men in Korea are more likely to experience sudden death in their daily lives than in other age groups, and they may be said to be in a state of health risk, through persistent lifestyle habits such as high fat dietary intake, drinking and smoking, excessive stress in home and society, excessive stress on work, and lack of rest and exercise. Therefore, nurses need to provide middle-aged men with nursing care that can improve their health, prevent disease and preserve their health.[4]

Health conservation is the maintenance of physical, mental and social well-being and a balance of physical, mental and social psychological integrity[5] and when conservation is achieved, people are harmonious and adaptable.

Among previous studies, there are studies on depression, stress, health promoting behaviors, and life satisfaction among middle-aged men, but there is a lack

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of research that explains the overall health dimension such as health conservation or various factors of health. Middle age adults perceived their health condition as a major influence on health conservation[6] and considering that health awareness is a major factor in changing behavior, it needs to be included in this study. For middle-aged men, stress and lifestyle are important factors in health-related quality of life.[7] And as for male elderly, self-esteem is the most influential factor for successful aging and for middle-aged men, self-esteem can also be deduced to have a major impact on health conservation. When people have self-efficacy that they can do something by themselves, they can preserve their health by doing something that leads to health.[8] In addition, since the concept of wisdom in life is a function of the mind that sees the reason or the good and evil of things, and includes positive qualities such as self-unification and maturity, judgment and interpersonal skills, and excellent understanding of life, it is considered to be the core of human development.[9] In a study of middle-aged adults, women, and elderly people with chronic diseases, wisdom was found to be an important factor in health conservation.[4,6,8,10] The purpose of this study was to investigate the relationship between perceived health status, stress, lifestyle habits, self-esteem, self-efficacy, wisdom and health conservation, and investigate the effect of them on health conservation of subjects to provide basic data on the development of nursing interventions to improve the health conservation of subjects.

METHOD

Subjects

The subjects of this study were convenience extraction of 134 middle-aged men who live or work in Gyeongbuk C and M cities. The sample size was calculated using the G Power 3.1.17 program using 0.15 effect size, 0.05 significant level, 0.90 power, and 6 predictors.

Instruments

Perceived Health Status

This study utilized the 3-question tool developed by Speake, Cowart and Pellet.[11] A higher score means that they perceive that their health status is better. Cronbach's α was .91.

Stress

This is a measure developed by Cohen, Kamark, & Mermelstein and translated by Park & Seo.[12] The higher the total score, the higher the perceived stress level. Cronbach's α was .83.

Lifestyle Habits

Lifestyle habits instrument which was an adaptation by Ro[13] from the health promotion behavior evaluation index by Wilson and Ciliska was used. It was composed of a total of 25 questions. In the study, reliability was.74.

Self-esteem

The tool was used by Jeon[14] to translate the self-esteem scale developed by Rosenberg. This scale is a total of 10 questions. The higher the score, the higher the self-esteem, from the total average rating of 1 to 4 points. Cronbach's α was .89.

Self-efficacy

The tool was used by Noh[15] to translate the general self-efficacy scale developed by Chen, Gully, & Eden. It is a 5-point Likert scale with a total of 8 questions, and it means that the score is high, the score is high. Cronbach's α was .93.

Wisdom

To measure the wisdom of middle-aged men, this study measured it with the 'wisdom scale of Korean elderly people' developed by Sung, Lee and Park.[16] A higher score indicates that the degree of wisdom perceived by the middle-aged men were higher. Cronbach's α was .90.

Health Conservation

Health conservation is a physically, mentally, socially and psychologically integrated object that maintains the balance. To measure the health conservation of subjects, this study measured it with the health conservation scale developed by Sung[5]. A higher score indicates that the degree of health conservation was higher. Cronbach's α was .85.

Data collection

The data for this study were collected from May 21th to June 25th in 2018. We visited the parks and sports facilities located in C, M city in Gyeongbuk to explain

the purpose of the research to the people who met the standards of the targets of the survey and received written agreement from them. After that, we distributed the structured questionnaires and had the respondents fill them out on their own.

Ethical Consideration

This study obtained an approval from the Institutional Review Board of K University on the content and methodology (IRB No. KNU_IRB_2018-04). This study conformed to the research ethics guideline during the research period. The purpose and objectives of the study were fully explained to the subjects before data collection. The subjects were clearly told that they could drop out or cease anytime during the research period. Then, the questionnaire was distributed after they gave written consent.

Data analysis

Data were analyzed using IBM SPSS Statistics 23 program. The general characteristics of the subject were analyzed with frequency and percentage. Heath conservation and related variables of the subjects were analyzed with descriptive statistics. To analyze the difference in the health conservation by the general characteristics, t-test and ANOVA were used. The correlation among the health conservation and variables was analyzed with Pearson's correlation coefficient. To identify the factor having influence, the multiple regression analysis was used.

RESULTS

General Characteristics of Subject and Difference in Health Conservation by General Characteristics

The subjects participated in this study were 134 and for the age, the person of 50-59 years old were 82 persons (61.2%), the persons of under 49 years old or over 60 years were 52 persons and the average age was 52.17(5.22) years old. Most of the 115 subjects had spouses (85.8%). The education level of the subjects was 70 (52.2%) in the case of having a university or higher education level. As a result of comparing the difference of health preservation of middle-aged men according to general characteristics, there was a statistically significant difference depending on the degree of education school (t=3.388, p=.037) (Table 1).

Table 1. The General Characteristics of the Subjects (N=134)

Variables	Categories	N(%)	Health conservation	
			M±SD	t/F(p) Scheffe test
Age	Under 49 years	40(29.9)	2.84(0.26)	1.438(.241)
	50~59	82(61.2)	2.77(0.22)	
	Over 60 years	12(9.0)	2.74(0.36)	
Spouse	Yes	115(85.8)	2.79(0.26)	0.477(.634)
	No	19(14.2)	2.76(0.15)	
Educational level	Below primary school graduate [a]	2(1.5)	2.78(0.46)	3.388(.037)
	Middle-High School graduate [b]	62(46.3)	2.73(0.23)	b<c
	College graduate or higher [c]	70(52.2)	2.84(0.24)	
Job	Yes	123(91.79)	2.78(0.25)	-1.456(.170)
	No	11(8.21)	2.86(0.17)	
Religion	Yes	63(47.0)	2.81(0.24)	0.971(.333)
	No	71(52.9)	2.77(0.25)	
Number of disease	None	86(64.2)	2.77(0.24)	-1.206(.231)
	More than one	48(35.8)	2.82(0.26)	
Regular exercise	Regular	89(66.4)	2.81(0.25)	1.694(.094)

Cont... **Table 1. The General Characteristics of the Subjects (N=134)**

	None	45(33.6)	2.74(0.24)	
Economic condition	Good	45(33.6)	2.77(0.26)	-0.616(.540)
	Bad	89(66.4)	2.80(0.24)	
Pain	Weak	60(44.8)	2.77(0.19)	0.247(.782)
	Moderate	61(45.5)	2.80(0.28)	
	Severe	13(9.7)	2.80(0.32)	

Degree of the Perceived Health Status, Stress, Lifestyle Habits, Self-esteem, Self-efficacy, Wisdom and Health Conservation of Subjects

The perceived health status of subjects was 3.35. Stress was 2.55. Lifestyle habits were 3.49. Self-esteem was 3.76. Self-efficacy was 3.63. Wisdom was 3.00. Health preservation was 2.78 (Table 2).

Table 2. Degree of Health Status, Stress, Lifestyles Habit, Self-esteem, Self-efficacy, Wisdom and Health Conservation of Subjects (N=134)

Variables	**Possible range**	**M(SD)**
Perceived health status	1-5	3.35(0.79)
Stress	1-5	2.55(0.53)
Lifestyle Habits	1-5	3.49(0.39)
Self-esteem	1-5	3.76(0.59)
Self-efficacy	1-5	3.63(0.57)
Wisdom	1-4	3.00(0.28)
Emphatic emotion	1-4	3.01(0.28)
Introspection	1-4	3.06(0.34)
Overcoming life Experience	1-4	2.88(0.33)
Health conservation	1-4	2.78(0.25)
Personal integrity	1-4	2.76(0.29)
Energy conservation	1-4	2.77(0.29)
Structural integrity	1-4	2.91(0.32)
Social integrity	1-4	2.71(0.33)

Correlation of Perceived Health Status, Stress, Lifestyle Habits, Self-esteem, Self-efficacy, Wisdom and Degree of Health Conservation of Subjects

Health preservation in middle-aged men, stress ($r=-.343$, $p<001$), lifestyle habits ($r=.295$, $p=.001$), self-esteem ($r=.398$, $p<001$), self-efficacy ($r=.471$, $p<.001$) and wisdom ($r=.714$, $p<.001$) were statistically relevant at a significant level (Table 3).

Table 3. Correlation of Perceived Health Status, Stress, Lifestyle Habits, Self-esteem, Self-efficacy, Wisdom and Degree of Health Conservation of Subjects (N=134)

Variables	Perceived health status r(p)	Stress r(p)	Lifestyle habits r(p)	Self-esteem r(p)	Self-efficacy r(p)	Wisdom r(p)
Health conservation	.128(.071)	-.343(<.001)	.295(.001)	.398(<.001)	.471(<.001)	.714(<.001)

Factor Having Influence on Health Conservation of Subjects

Regression analysis is analyzed by adding independent variables and education levels. In addition, before performing the regression analysis, the multicollinearity was verified. The variance inflation factor of the research variables was 1.000 not greater than 10 and since in the results of testing the autocorrelation using Durbin-Watson, it was 1.572 and the tolerance limit was 1.000 showing that there is not value of 0.1 or less, all the variables represented not to have problem of multicollinearity.

In the results of examining the factor having influence on the health conservation, the corrected R^2 of the regression model was .507 and the explanatory power of the independent variable was 50.7%, the goodness of fit (F=137.658, p<.001) of the regression model was shown significant and the significant factor having influence was 1, among which the wisdom had explanatory power of 50.7% (β=.714, t=11.733, p<.001) (Table 4).

Table 4. Factor Having Influence on Health Conservation of Subjects (N=134)

Variables	B	SE	β	t(p)	*Adj. R^2*	*F(p)*
Constant	.900	.161		5.579(<.001)	.507	137.658(<.001)
Wisdom	.629	.054	.714	11.733(<.001)		

DISCUSSION

The results of this study showed that subjects graduated from college or graduate school showed better health conservation than subjects graduated from middle or high school. It was similar to the result[8] of studying the quality of life related to health for working men, where there was a difference in the quality of life related to health among men with higher education level than men with lower education level, and the results[11] of a study of elderly people with chronic illnesses showed similar differences in the degree of health conservation by educational background. It will be necessary to continue education using health-related experts.

In general, the degree of health-related variables of middle-aged men is moderate. In order to overcome and adapt to physical aging and loss, one must perform health conservation activities to lead self-directed life after middle age.

In middle-aged men, health conservation was higher when lifestyle habits were higher, when self-esteem and self-efficacy were higher, with wiser life, when health conservation was better, and when there was less stress. Especially, wisdom was found to be the most important factor in the health conservation of middle-aged men and the explanation power of wisdom was as high as 50.7%.

In a study, men in the workplace reported a positive correlation between health-related quality of life and lifestyle habits and self-esteem, and stress correlated negatively[8] and these results were similar to those of my study. Lifestyle habits in general are influenced by the amount of unhealthy behavior[17] and because stress can lead to fatigue and depression and can lead to variable

disease,[18] it can cause difficulties in preserving health.

Health conservation was highly correlated with self-efficacy and wisdom.[10] Therefore, middle-aged men should have healthy lifestyle habits in their daily lives and act to increase their self-esteem and self-efficacy, and it is desirable to manage their health in a way that minimizes stress. Especially, the variable that had the most important effect on health conservation was wisdom. In a study of health conservation,[19] the self-efficacy of the elderly was positively correlated with the meaning of life, and the meaning of life was the most important factor influencing health conservation. Wisdom is a mental function that distinguishes things from goodness and good and evil, and includes positive qualities such as self-integration and maturity, judgment and interpersonal skills, and an excellent understanding of life,[8] and the emotional sentiment, self-reflection, and experience of overcoming the life are considered to be similar to each other. Therefore, it is very important to understand the meaning of life and to live wisely to preserve the health of middle-age and old age.

In addition, the concept of wisdom is considered to be an important concept for elderly or women, but it is a concept that can be applied to all human beings because it is positive qualities such as self-integration and maturity, as well as deep understanding of life. Therefore, it is a concept that affects the health of middle-aged men in a very important way. Therefore, it is necessary to find ways to improve communication and wisdom with nurses and other specialists so that they can live wisely in everyday life.

CONCLUSION

In this study, There is significance in the study that it was found wisdom is also an important health conservation influence factor for middle aged men. However, this study was aimed at a sample of subjects in Gyeongbuk, and therefore, it is necessary to pay close attention to the extension analysis, and there is also a need to expand the number of subjects and areas to be studied in the future and to search for unidentified factors.

Conflict of Interest and Source of Funding: The authors declared no conflict of interest. This work was supported by the research grant of the Kongju National University in 2018.

Ethical Clearance: The data of this study was analyzed after review and approval of Institutional Review Board in K University (IRB No: KNU_IRB_2018-4)

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DOI Numher: 10.5958/0976-5506.2018.01377.3

Micro Oxidation Sterilization by Non-Thermal Plasma Technology

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ABSTRACT

This study was carried out to compare the efficiency of sterilization by using non-thermal plasma technology with other traditional sterilizations and to study more on the concept of non-thermal plasma technique on kitchenware. Different kitchenware was used during this study. They were stainless steel plates, plastic plates and frying pan. *Escherichia coli (E. coli)* and *Staphylococcus aureus (S. aureus)* were used as contaminants and were grown on Brain Heart Infusion agar and broth (BHI) medium. Standard Gram staining method and light microscopy were used to observe the characteristics of the bacteria. Plasma chamber was used to expose the kitchenware directly to plasma. They were exposed at different durations. There was completely no growth of bacteria after 30 minutes of exposure to plasma for all three different conditions applied on those specific kitchenware suggesting this to be the optimum time point reach by this plasma chamber for sterilization purpose.

Keywords: *Micro oxidation, sterilization, Plasma technology, non-thermal.*

INTRODUCTION

Sterilization is the process of killing all forms of microbial existence in or on particular objects. In microbiological term, sterile material represents no living organisms at all [1]. One type of sterilization method is chemical sterilization where this technique occupies a treatment of preparations to be sterilized with selected chemicals in either gaseous or liquid form. Gaseous sterilization is done by exposure to a gas that destroys microorganisms. The most commonly used gas for sterilization is ethylene oxide and formaldehyde [2]. However, ethylene oxide has some drawbacks as it residues being absorbed on devices after sterilization process where it is highly toxic, carcinogenic and mutagenic. Same goes with formaldehyde too [3]. So, gaseous sterilization by using plasma is the best. It is a safer technique to be applied and free from harmful properties compared to the other types of gaseous used before.

Plasma is an incompletely or entirely ionized gas comprising of various elements, such as electrons, ions, atoms, and molecules [4]. It is an efficient biological disinfectant [5] for microorganisms. There are two categories of plasma which are thermal plasma and non-thermal plasma. Thermal plasma is where almost all its elements are at equilibrium condition. The non-thermal plasma is not in the equilibrium condition. It differs significantly between the electrons and the other particles such as ions, atoms, and molecules. Non-thermal plasma

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is also known as cold plasma [6], produce a variety reactive constituents, including charged particles and UV radiation, without increasing temperature. Oxidation is a reaction of a substance with oxygen as the electrons were lost during the oxidation process. These tiny substances converted into volatile compounds that can be pumped away. It also referred as micro oxidation [6].

Since, non-thermal plasma (NTP) was reported to have shown advantages such as using low temperature and under appropriate situation [7], injury of the objects or materials can be reduced [3], used for inactivation of surface contaminants [8], eliminate the yield of toxic by-product [8] and also affordable cost effective methods [9], therefore, our aim of this study were to compare the efficiency of sterilization by using non-thermal plasma technology with other traditional sterilizations and to study more on the concept of non-thermal plasma technique on kitchenware.

MATERIALS AND METHOD

Preparation of culture media and bacterial strains

The Brain Heart Infusion agar and broth (BHI) medium were prepared based on needs. *Escherichia coli (E. coli)* and *Staphylococcus aureus (S. aureus)* were grown on Brain Heart Infusion (BHI) broth medium with suspension of 10 ml at 37°C for 24 h.

Contamination of Surfaces

E. coli and *S. aureus* were employed as the target to be sterilized. In this experiment, the kitchenware chosen to be used were stainless steel plate, plastic plate and frying pan. Three items of each kitchenware would be sterilized in four different time points in three variable types of condition each. The three conditions applied are (1) normal washing without any bacteria inoculated on its surface, (2) inoculation with *E. coli* on each surfaces of kitchenware and (3) inoculation with *S. aureus* on each surfaces of kitchenware by using swabbing technique.

Chamber Cleaning

Sterile the chamber surface with alcohol swab to avoid any contamination during the experiment.

Plasma Treatment

The plasma generator was set at 110V and 50-Hz frequency for all experiments. All the kitchenware (control and contaminated surfaces) were introduced into the plasma chamber for 10, 20 and 30 minutes duration. These plates were exposed directly to the plasma. At a certain pressure, sterilization gases (air, O_2, H_2O_2, N_2, H_2O) were fed into the chamber, separately and were allowed to flow at a specific rate.

After plasma treatment, surface of all kitchenware used were swabbed by using sterile cotton swab on BHI agar medium before and after located in the plasma chamber. Then all the petri dishes were incubated for 24 hours at 37^0C. Sterilization effect of plasma O_2 was inspected by comparing the number of colonies with and without plasma treatment.

haracterization of experiment (Confirmation test)

Gram staining and microscopic morphology observation were used to observe the bacteria.

Gram Staining

It is a differential staining technique used to characterize bacteria as Gram positive and Gram negative. Standard Gram staining method was used. The fixed bacterial smear is subjected to Crystal Violet, Iodine Solution, Alcohol (decolorizing agent) and Safranin respectively. Gram-positive bacteria retain crystal violet and hence appear deep violet in color, while Gram negative bacteria lose the crystal violet and are counterstained by the Safranin. Hence they appear red in color. After Gram staining bacteria were observed under a Light Microscope to observe their shape and arrangements.

RESULT AND DISCUSSION

Based on the results obtained from the experiment, the condition of normal washing for stainless steel plate shows a few colonies grow on the media at 0 minute before put into the plasma chamber and the colonies become fewer at 10 minutes after put into the chamber. No colony grows at 20 minutes and 30 minutes after plates were put into the plasma chamber. Another condition is contamination of plate surface with *E. coli* strains show the growth of colonies all over the media at 0 minute before the plate was put into the chamber and the colonies become lesser at 10 minutes after put into the plasma chamber. There are totally no colony grows at 20 and 30 minutes' time points. For surface contamination with *S. aureus*, the results obtained same

with the *E. coli* contamination before. So, overall of these three conditions show no colony grows at 30 minutes after put the plate into plasma chamber. The result has been summarized and can be referred in **Table 1.**

Table 1: Experiments carried out on Stainless Steel Plates

Type of condition	**Before placed in the chamber**	**After placed in the chamber**		
	0 min	10 min	20 min	30 min
Normal washing	Few colonies grow on media	Fewer colonies grow than before (0 min)	No colony grows	No colony grows
Escherichia coli (*E. coli*) swab (on surface)	Colonies grow overall the media	Less colonies grow than before (0 min)	No colony grows	No colony grows
Staphylococcus aureus (*S. aureus*) swab (on surface)	Colonies grow overall the media	Less colonies grow than before (0 min)	Lesser colonies grow than after 10 min	No colony grows

These 3 types of condition were also applied on another kitchenware which is plastic plate and frying pan. The results were shown in **Table 2** and **Table 3** below.

Table 2: Experiments carried out on Plastic Plates

Type of condition	**Before placed in the chamber**	**After Placed in the chamber**		
	0 min	10 min	20 min	30 min
Normal washing	No colony grows	No colony grows	No colony grows	No colony grows
Escherichia coli (*E. coli*) swab (on surface)	Colonies grow overall the media	No colony grows	No colony grows	No colony grows
Staphylococcus aureus (*S. aureus*) swab (on surface)	Colonies grow overall the media	Less colonies grow than before (0 min)	14 colonies grow on the media (lesser)	No colony grows

Table 3: Experiments carried out on Frying Pan

Type of condition	**Before placed in the chamber**	**After Placed in the chamber**		
	0 min	10 min	20 min	30 min
Normal washing	No colony grows	No colony grows	No colony grows	No colony grows
Escherichia coli (*E. coli*) swab (on surface)	Colonies grow overall the media	No colony grows	No colony grows	No colony grows
Staphylococcus aureus (*S. aureus*) swab (on surface)	Colonies grow overall the media	Less colonies grow than before (0 min)	Lesser colonies grow than 10 min	No colony grows

The colonies grown were subjected to Gram staining which showed Gram positive cocci in clusters. This microorganism is facultative anaerobes and is expected to be *Staphylococcus aureus.*

As there are completely no colony grows at each 30 minutes for all three different conditions applied on those specific kitchenware, so this is the optimum time point reach by this plasma chamber for sterilization purpose.

Plasma O^{-2} technology produces a corona-effect without sparking. Each tube has 100 discharge points producing an abundant stream of oxygen plasma for effective and continuous sterilization and purification of air and surfaces. The unit produces a controlled and continuous high energy electron discharge across the glass wall of the plasma tube. This splits the oxygen molecules in the air to form negatively-ionized oxygen plasma. One of the oxygen radicals found in the plasma include hydrogen peroxide (H_2O_2), a very powerful disinfectant and cleanser. When it encounters bacteria, it quickly oxidizes some of the components of the cell membrane causing the bacteria to die quickly. Therefore, it could be a very efficient biocidal against bacteria. The plasma treatment can effectively inactivate a wide range of microorganisms including spores and viruses. This low- pressure oxygen plasma has been shown to degrade lipids, proteins and DNA of cells.

The plasma chamber is also not an ozone-generator. Ozone generators produce high levels of ozone which are toxic to human. The plasma chamber complies with the World Health Organization (WHO) standards on ozone emission (less than the permitted level of 0.05ppm).

Some of the general characteristic of this plasma chamber are - (1) using the non-thermal plasma technology, (2) small in size, compact and silent chamber, (3) consumed low energy, (4) designed for 24 hours operation and (5) maintenance-free.

The plasma is highly reactive and purifies both air and surfaces by killing bacteria and viruses, 98% odor neutralization and toxic gases, cleansing the air of dust and particulates, reduce aerobic bacteria, mold and fungus up to 90% germ sterilization and freshening the air with negative ions.

CONCLUSION

Cold plasma treatment is a promising technology which acts rapidly and does not leave toxic residual on processed parts of kitchenware (on its surface). The temperature rise also can be kept to an acceptable level. The cold plasma is an emerging disinfection method that approach for reducing the microbial populations on the surface of kitchenware at 30 minutes as the optimum time taken.

Ethical Clearance- Not required

Source of Funding- Self

Conflict of Interest - Nil

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DOI Numher: 10.5958/0976-5506.2018.01378.5

Practical and Simple Method in Measurement of Forearm Muscle Fatigue in Computer Operator

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ABSTRACT

Fatigue is a problem experienced by every worker, especially computer operators that until now cannot be overcome. Various methods used in analyzing the occurrence of muscle fatigue under the computer operator, such as handgrip and lactic acid blood plasma levels. This study aimed to find a method of measuring muscle fatigue in computer operators that can be applied in the field or workplace with the principle of simple, fast and cheap without ignoring the level of accuracy. The results showed that there was a correlation between the measurement of handgrip method with a lactic acid concentration of blood plasma to muscle fatigue, where $p = 0.000 < 0.05$ with $r_s = 0.667$. Furthermore, it can be concluded that measurement of handgrip method and lactic acid blood plasma level as a fast, simple and cheap method can be used as a parameter to determine the fatigue of the forearm muscle of computer operator after working in the computer.

***Keywords**: Fatigue, Handgrip, Lactic acid level*

INTRODUCTION

Fatigue is a protective mechanism for the body to avoid further damage. Fatigue usually indicate different conditions in each individual, but it all leads to loss of efficiency and decreased work capacity and body resistance[(1)]. The problem of fatigue in the world of work is a common problem that can lead to occupational diseases, but until now the problem of fatigue has not been fully addressed by the world. Workers with fatigue have low productivity, with a higher risk of accidents in the workplace, which can affect workers' health[(2)]. Muscle fatigue has been studied using a variety of exercise models, protocols and assessment methods[(3)] . Research on fatigue aims to find methods to prevent or reduce the occurrence of fatigue at work. Many ways to know the fatigue in muscle or body, both local fatigue, and general fatigue. A variety of methods can be used in determining fatigue, ranging from the most complicated and expensive methods to simple and inexpensive methods with relatively inexpensive results[(4)].

This study compared the presence of muscle fatigue in the lower arm of the computer operator after working in front of the computer for more than 4 hours. Fatigue is known by looking at blood lactic acid levels of blood plasma and muscular contraction ability of the forearm through the handgrip before and after work. There are differences in lactic acid levels of blood plasma and contraction ability of the fingers and arms before and after working in front of the computer for 4 hours[(5)]

The above description shows that blood plasma lactic acid levels and muscle contraction ability with handgrip can be used as a parameter of muscle fatigue in the forearm of computer operator after doing work activity. The above problem can be used as a measurement method because it can be done quickly, easily and at a cheaper cost.

MATERIAL AND METHOD

This study aimed to recommend a simple method in a fast way as the parameters determine the fatigue of the forearm muscles of the computer operator after

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working for 4 hours. The research was conducted in 2017 at the regional office of the Directorate General of Taxes of South Sulawesi. The main sources required in this study were: 1) handgrip to measure the ability of muscle contraction, 2) accutrend to measure blood plasma lactate acid level, 3) research subjects are male employees aged between 25-40 years, have no history of disease with physician recommendations, free from musculoskeletal disorders and working on the computer at least 4 hours, so a large sample 175 people.

Evidence of the effectiveness of this simple method was implemented with several steps: 1) validation of measuring instruments by comparing the results of standard laboratory tests to determine the accuracy and accuracy of the measuring tool to be used, 2) measure muscular contraction muscle capability of computer operator by using handgrip before and after work in computer for 4 hours, 3) measure blood lactate acid level by taking blood + 0.5 ml, before and after work on computer 4 hours, 4) compare result of measurement of both method to know the increase of lactic acid level of blood plasma and decreased ability of muscle contraction.

FINDINGS

The selection of measurement methods as parameters of muscular arms fatigue is based on the theory that functional ability of the forearm grip is influenced by fatigue[6]. Muscle strength is an important component in assessing muscle activity, which increases or decreases muscle strength can affect muscle performance[6,7]. Therefore, the measurement of grip strength allows in determining the parameters of the ability of arm muscle activity[8]. At lactic acid levels showed that there was a correlation between elevated lactic acid levels of blood plasma with the decreased ability of muscle contraction[9]. Increased levels of lactic acid in the muscle will affect the ability of muscle contractility, but the increase in lactate in extracellular level indirectly affects the ability of muscle contraction. A decrease in blood pH will affect muscle contraction ability[10,11]. Thus the method of handgrip and lactic acid blood plasma levels method can be used as a parameter of muscle fatigue in the forearm of the computer operator.

In the various literature described various methods used in determining the presence or absence of fatigue of a muscle or muscle group. Good measurements using electrical, chemical, mechanical methods and questionnaires[2,4]. The method is used based on the purpose and type of fatigue that occurs. Muscle fatigue can generally be used with electrical, chemical and mechanical methods[2]. In field research, the measurement of muscle fatigue determination should be used as a simple method, fast and cheap by not ignoring the level of accuracy in the measurement[1]. Based on the analysis of objectives and benefits, the researchers choose the parameter method in determining fatigue, the method handgrip, and lactic acid blood plasma levels. Both methods show the difference between measurement results before and after doing work on the computer for four hours(1). For more details can be seen table 1.

Table 1. Relationship Analysis of Measurement Result of Muscle Fatigue and Lower Arms Computer Operator Based on Measurement Handgrip and Lactic Acid Level of Blood Plasma

Variable	Mean	SD	Min	Max	R_sp	p-value
Changes in muscle contraction ability /handgrip (kg)	-4.33	2.15	-11.00	0.00	0.667	0.000
Change in lactic acid Level (mmol/L)	0.51	0,31	0.11	1.50		

Spearman test results on the relationship of muscle contraction ability change (handgrip) with changes in blood plasma lactate acid levels before and after work for four hours on the computer showed a relationship with significant value 0.000 <0.05, where the change in the ability of contraction of the muscles of the finger and forearm operator computer at -4.33 + 2.15 kg with the lowest change -11.00 kg and the highest 0.00 kg.Changes in blood plasma lactic acid level of 0.51 + 0.31 mmol / L with the lowest change of 0.11 mmol / L and the highest 1.50 mmol / L. If muscle fatigue occurs, the handgrip examination will show a decrease in the

ability of muscle contraction, whereas in the lactic acid level of blood plasma is increased.

The results of the analysis concluded that there is a correlation between the change of muscle contraction ability with the change of lactic acid level of blood plasma of computer operator, meaning the higher the decreasing ability of muscle contraction, the higher the lactic acid blood plasma level increase in fatigue of finger muscle and forearm of computer operator. Muscle fatigue occurs, then the handgrip show the decreased ability of muscle contraction, while the lactic acid level of blood plasma is increased. It is recommended that the measurement of muscle fatigue rate quickly, simple and cheap in the field can be used handgrip method and lactic acid blood plasma level. But both methods can not know whether the muscle fatigue as a result of local or general muscle fatigue.

DISCUSSION

This study presents an effective method used in the field in determining muscle fatigue of the forearm of the computer operator after work. The handrip method is used for the reason that grip strength is an indicator of muscle strength as a parameter that is easily measured[12]. Strength grip with handgrip as one of the characteristics of the sensation of fatigue[13]. The handgrip method is used as a parameter, since the use of handgrip may indicate a decrease in the ability of muscle contraction as a sign of fatigue, as a result of decreased blood supply to the muscle associated with decreased muscle electrical activity[14]. Muscle fatigue occurs as a result of reducing the coupling of excitation contractions caused by the decreased number of active cross bridges due to decreased release of Ca^{2+}, decreased myofilament sensitivity in Ca^{2+} and reduced strength produced by a cross bridge[15]. The hangrip method can measure the ability of muscle contraction throughout the range of motion of the joints because the mechanism occurs because of the long relationship of muscle tension, arm and activity moment and muscle mass[16]. Lactic acid method of blood plasma is done to determine the relationship of muscle fatigue with chemical changes in the blood[17,18]. The mechanism of increased lactic acid levels after work can occur because the work causes the muscles to contract continuously both statically and dynamically to the load given. The continuous contraction in the muscle causes a reduced muscle response which is shown in progressively decreasing the motor unit's potential amplitude, resulting in a gradual decrease in the strength capacity produced by the neuromuscular system. This is due to a combination of factors, i.e., interference with the mechanism of muscle contraction due to decreased energy storage, obstacles to the influence of the central nervous system and decreased impulse conduction in the myoneural distortion, especially in fast fibers[6]. There is a relationship between decreased strength or fatigue with decreased ATP, increased inorganic phosphate (Pi), increased ADP and PCr depletion which in turn increases the accumulation of lactic acid in the blood[10,19]. Maximum exercise voluntarily increases lactate concentration as a parameter of fatigue as evidenced by measurement results using a rating of perceived exertion (RPE) [1,6,9,14]. Blood lactate concentration reflects the anaerobic capacity of the muscle, lactate or H + ion is a potential factor causing fatigue[10,20]. Muscle fatigue can occur through the process of the phosphagen system and anaerobic glycolysis, where the phosphagen system can only provide energy with a short span of time, so anaerobic glycolysis becomes the main metabolic pathway that eventually produces lactic acid[21]. Thus muscle contraction due to computer work can lead to decreased ability of muscle contraction and increase lactic acid blood plasma level. This means there is a relationship between changes in muscle contraction strength with changes in lactic acid levels of blood plasma in computer operator after working on the computer. Handgrip method and lactic acid levels can be used to assess the fatigue that occurs in the forearm muscles of computer operators after doing work on the computer.

CONCLUSION

This research has recommended a simple, fast and cheap method of measuring muscle fatigue that can be done in the field without reducing the accuracy of the measurements. This method can be used one or a combination of both to see muscle fatigue after work. These findings are expected to contribute positively to improve the quality of field measurements that require fast, simple and inexpensive measurement results and can be developed on other types of conditions and workers.

Conflict-of-Interest Statement: The authors declare that there is no conflict of interest related to this research.

Source of Funding : The funds of the research come from the researchers.

Ethical Clearance: The certificate of ethical clearance is taken from the Ethics Committee of "Airlangga University" with number "481-KEPK".

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DOI Numher: 10.5958/0976-5506.2018.01379.7

Knowledge of Antenatal Mothers Admitted in King Abdul-Aziz Medical City (KAMC), Riyadh Regarding Therapeutic Benefits of Post-Natal Exercises

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ABSTRACT

The physiological changes that happen during pregnancy and after delivery may affect every mother's quality of life. They may face chronic back pain and incontinence issues due to negligence of postnatal exercises. Though a large volume of scientific evidence suggests that post natal exercises are beneficial for preventing disorders and dysfunctions, we were interested in investigating the present level of knowledge regarding the therapeutic benefits of postnatal exercises among antenatal mothers. A quantitative descriptive cross-sectional prospective hospital-based study was carried out among 62 antenatal mothers by handing out a structured postnatal exercise knowledge assessment questionnaire. The result showed that majority of mothers who were admitted at King Abdul-Aziz Medical City in their third trimester had knowledge regarding postnatal exercises representing (70.53%) of the total participants, whereas only (29.47 %) of mothers were unaware of the benefits of postnatal exercises. However the mothers who had knowledge about the benefits of postnatal exercises were not all at the same level of awareness, which means that there were variations among their responses in each item of the questionnaire. It is evident from this study that higher number of antenatal mothers, who were admitted in King Abdul-Aziz Medical City in their third trimester, had knowledge regarding benefits of postnatal exercises.

Keywords: *antenatal mothers, postnatal exercises, King Abdul-Aziz Medical City.*

INTRODUCTION AND BACKGROUND

Motherhood would help a woman achieve physical and mental self-realization. No other achievement in her life would have such a profound effect on the body, mind and societal aspects of her life[1].The physiological changes along with the musculoskeletal alterations that happen during pregnancy and throughout postpartum leads to joint laxity in the anterior and longitudinal ligaments of the lumbar spine, widening and increased mobility of the sacroiliac joints, pubic syphilis and pelvic bones results in back pain which may affect the mother's quality of life[2]. Hence the choice of rest with no activities may again cause the mothers to face chronic back pain and incontinence issues. Postnatal exercises are important to improve women's health after delivery and help to prevent problems such as pelvic floor dysfunction, shoulder pain, back pain, and muscular disorders[3]. Previous research overwhelmingly suggests the benefits of postnatal exercises, which include improved fitness, decreased body fat, decreased risk of colon cancer, and minimizing the possibility of hypertension[4]. Women, who did postnatal exercises showed improvement in mental health, were less depressed, and anxiety was less common among them[5]. Exercises are important in the postnatal period to lose weight and return to ideal body weight as long-term weight gain can lead to many lifestyle disorders such as obesity, heart diseases, and diabetes[4].

Earlier studies indicate that ignorance of postnatal exercises deprived women of its benefits and found

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that there were changes in postnatal exercise patterns based on demography of the women participents[6]. It was also observed that majority of the mothers have moderate knowledge about postnatal exercise and they were poorly performed[7, 8]. Previous studies also revealed that even though postnatal exercise is advised as part of perinatal care, very fewer percentages of the women have the habit of doing it regularly[9]. Exercise program is one of the effective interventions to prevent lumbo-pelvic pain (LPP) following delivery. Manual therapy is one of the most effective interventions to prevent from pregnancy related back and pelvic pain[10].

Studies regarding knowledge about postpartum exercise among Saudi nursing mothers conducted in the well-baby and obstetrics clinics of King Abdulaziz University Hospital, Jeddah concluded that women had adequate knowledge about postpartum exercise[11]. Women knowledge was significantly related to their age, income and parity. In addition, women obtained their information about postpartum exercises from different sources such as social media and internet as primary source of knowledge, books, family and friends, while not mentioned the healthcare as source of information. However the awareness of such knowledge among antenatal mothers needed to be evaluated among those who were admitted in King Abdulaziz Medical City, National Guard Health Affairs Riyadh, Saudi Arabia.

MATERIALS AND METHOD

A quantitative, descriptive, cross-sectional, prospective, hospital-based study was carried out among the antenatal mothers in the inpatient unit of King Abdulaziz Medical City hospital. With a population of 73 antenatal mothers visiting King Abdulaziz Medical City, 5% Margin of error and 95% confidence level, the sample size was calculated to 62. The inclusion criteria were antenatal mothers who were admitted in King Abdulaziz Medical City hospital posted for delivery, mothers in the third trimester, and those who were willing to participate. The exclusion criteria involved antenatal mothers who had complications during their pregnancy, outpatient mothers in their third trimester. The consecutive sampling technique was used and mothers were invited to participate in the study by explaining the objectives and obtaining informed consent. Data were collected by handing out a structured postnatal exercise knowledge assessment questionnaire. The questionnaire was formulated in English language then translated to Arabic by a certified translation professionals and validity of the questioner was established by native Arabic language speaking experts in the various fields of medical sciences. There were 19 items divided into two parts. The first part was about the demographic data (8 items) and the second part had questions which assessed the knowledge of postnatal exercise (11 items).

RESULTS

The result of total responses showed that majority of mothers who were admitted at King Abdul-Aziz Medical City in their third trimester had knowledge regarding postnatal exercises representing 70.53% of the total participants, whereas only 29.47 % of total mothers were unaware of the benefits of postnatal exercises. The mothers who had positive response on the benefits of postnatal exercises questionnaire were not at the same level of awareness, which means that there were variations among them in each item of the questionnaire. Frequency and percentage of each item is demonstrated in the questioner. Item A in the questionnaire was the only element that showed higher negative responses among the mothers confirming that most of the participants had not received postnatal exercises before. On the other hand, the other items showed significantly positive responses and they obviously explained that the knowledge regarding the benefits of postnatal exercises among the antenatal mothers was higher than unfamiliarity. In (Item A), there were 12 mothers who had received postnatal exercises before and that were representing 19.4% of total percent. However, the antenatal mothers who had not received postnatal exercises were 50, which representing 80.6% of the total sample.

For (Item B), the number of participants who knew that postnatal exercises decrease tiredness and increase the sense of wellbeing was 52, which made 83.9% of the total participants nevertheless, the number of antenatal mothers who didn't know about such benefits were10 representing 16.1%. Regarding (Item C), 49 antenatal mothers had knowledge about the returns of postnatal exercises in losing weight that represent 79%, but those who had no information were 13 which is equivalent to 21% of the total. We found out that the antenatal mothers who knew about the benefits of postnatal exercises in improving cardiovascular fitness were 40 mothers representing 64.5% of the total percent. However, the mothers who didn't know were 22

representing 35.5% as elicited by (Item D). (Item E) was about the knowledge concerning postnatal exercises in improving the mood and gain in preventing postpartum depression, 41 mothers, which translates to 66.1% of total percent were aware, but the mothers who didn't recognize the benefits were 21 representing 33.9%.The greatest knowledge among antenatal mothers was score for (Item F) which was about benefits in improving the condition of abdomen muscles and they were 55 mothers who knew about it, 88.7% of the total sample in contrast 7 mothers didn't know the effects on abdominal strengthening, 11.3%. In (Item G), the mothers who had information about the benefits of postnatal exercises in healing the pregnant body by getting rid of aches and pains were 46 participants, 74.2% of total participants, but mothers who had no information were 16, 25.8%. The number of antenatal mothers who knew that postnatal exercises prevents the body from fatigue by improving endurance level, and help the mother to take charge during motherhood were 42 women i.e. 67.7% , however, mothers who didn't know about it were 20 participants representing 32.3% (Item H). We found out that knowledge of antenatal mothers about the benefits of postnatal exercises in increasing body flexibility were 50 women representing 80.6% of total sample yet, the antenatal mothers who had no information were 12 representing 19.4% of the total percent in (Item I). 43 mothers representing 69.4% of the total percent knew about the benefits of postnatal exercises in strengthening pelvic muscles as shown in (Item J). Still, 19 mothers representing 30.6% didn't know. Finally, in (Item K) the number of antenatal mothers who knew that postnatal exercises helps in restoring muscles strength and firm up the body was 51 women, which means that 82.3% of the total sample whereas the number of antenatal mothers who didn't know was 11, i.e. equivalent to 17.7% of the total responses.

CONCLUSION

This study finding suggests that a large number of antenatal mothers in the third trimester admitted in King Abdul-Aziz Medical City, Riyadh had knowledge regarding benefits of postnatal exercises. Another study conducted in Saudi Arabia also concluded that women had sufficient knowledge regarding postpartum exercises[11]. Study results among pregnant and nursing mothers in Nigeria indicated that participation in antenatal and postnatal exercise was dependent on self-prescription as well as level of education[12]. The same investigators also found out that majority of Nigerian pregnant women demonstrated inadequate knowledge but had positive attitude towards antenatal exercises, knowledge about benefits and contraindications to antenatal exercises significantly influenced the attitude towards exercise in pregnancy[13]. A large number of Indian pregnant women demonstrated inadequate awareness but were optimistic towards exercises in pregnancy[14]. Different types of awareness program are required to improve maternal knowledge on postnatal care which includes in areas of lack of knowledge among mothers regarding postnatal period, postnatal exercise, timing of first bath after birth of baby[15]. Though the results of our study suggests that mothers had adequate knowledge regarding postnatal exercise to determine the level of knowledge of mothers throughout Saudi Arabia, a larger sample size and multi settings study needs to be undertaken.

Conflict of Interest- The authors have no conflict of interest to disclose.

Source of Funding- "The author(s) received no funding for this work and the study was in the non-grant category "

Ethical Clearance- The Institutional review board of the King Abdullah International Medical Research Center (IRB-KAIMRC) approved the study with the protocol number SP17/202/R. An informed consent was obtained from all the participants in the study.

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DOI Numher: 10.5958/0976-5506.2018.01380.3

The Effect of Physical Activity (Endurance and Strength) and Sleep Management on BMI and Body Fat Children Overweight in Makassar City

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ABSTRACT

Obesity of school children was 18.8% reached higher than to children under five, recent studies showed that obesity made effect to sleep management. This study aims to at analysis the effect of physical activity and sleep management on BMI for age and body fat percentage in overweight school children in Makassar City. A quasi-experimental design was conducted in two-schools at SDN Kompleks IKIP and IKIP 1 Makassar in January to May 2018. Total 42 samples have been selected purposive. Samples were divided into three groups, sleep management (SM), sleep management combination of physical activity (CP), and control (CT). Each group consists of 14 students. At baseline, there were no significant differences in nutritional intake, BMI, body fat percentage, and sleep quality of the three groups. Overall, after the intervention, BMI for age and body fat percentage no significant difference between groups SM, CP and CT. Significant differences in all groups were control variables, significant sleep quality (p=0.000), protein (p=0.008), fat (p=0.008) and carbohydrate (p=0.000). Furthermore, the analysis of each group there was the tendency of significant differences. The CP group significantly decreased to BMI for age 0.21 SD (p=0.027), fat 8.36% (p = 0.008), carbohydrate 22.29% (p=0.000), and increased to protein -30.50% (p=0.001). There was no effect of sleep management and sleep management combination of physical activity on BMI for age and body fat percentage. However, there was tendency to decreased BMI for age, nutritional intake and improve sleep quality. It takes discipline to the management of sleep and longer intervention period and sustainability.

Keywords: *Physical Activity, Sleep Management, BMI for Age, Body Fat, Overweight*

INTRODUCTION

Based on WHO data, 50 million girls and 74 million boys was obesity in the world[1]. Asia-Pacific represents the largest number of obesity region, including Indonesia. The prevalence of obesity increased by almost 40%[2]. Obesity of school children was 18.8% reached higher than to children under five[3]. Overweight children were four times as likely to become obese as adults, predictor of obesity and other metabolic risk factors in adulthood, a risk of various chronic diseases and a serious impact on the health and development of child psychology[4,5]. Unhealthy lifestyles and diets, including sedentary activity, screen time, low levels of physical activity, inadequate sleep may contribute to the risk of obesity[6]. Children were at the lowest level of physical activity, spending 50% of time for sedentary activity, 6.7% meeting physical activity[7]. Low levels of physical activity in children were associated with short and long-term psychological and physiological health consequences[8]. IOM physical activity guidelines recommend that school-aged children engage in 180 minutes of mild, moderate and severe physical activity[9]. Recommended for more moderate to vigorous-intensity physical activity[10]. Intervention in obesity prevention in school and family-based diet and physical activity that in children aged 5-7 years showed no difference in body fat percentage in girls and boys[11]. The recent studies showed that obesity made effect to sleep management. The meta-analysis of 700,000 child data studies from 20 countries, the average child was currently sleeping less 20-25

minutes each day than their parents at his age[12]. Several studies have reported an association between short sleep duration and health problems, including association with death, type 2 diabetes, hypertension, metabolic syndrome, respiratory illness, obesity in children and adults, and poor self-health[13]. Short sleep duration and poor sleep quality are significantly associated with obesity[14]. Less sleep (2-4 hours a day) can result in 18% loss of leptin and 28% increase in ghrelin, which can lead to increased appetite by 23-24%, resulting in a lack of physical activity followed by an increase in caloric intake[15]. The prevalence of sleep disturbance in children with obesity of 66.7% and sleep management affects the quality of sleep reached 85%[16]. NSF recommended of sleep duration of 6-13 year old school children take 9-11 hours[17]. But reportedly for school-aged children were not yet recommended, children more interested and spend more time for sedentary activity and caffeine products, all of which can cause sleeplessness, nightmares and sleep disturbance[18]. In relation to this matter, this research important to study about the effect of physical activity and sleep management on BMI for age and body fat percentage in overweight school children in Makassar City.MATERIAL AND METHODS A quasi-experimental design was conducted in two-schools at SDN Kompleks IKIP and IKIP 1 Makassar in January to May 2018. Schools were selected purposively, had been willing to cooperate and had not received similar interventions, had the same demographic characteristics, number of students, family socioeconomic status and school environment. Subjects involved in the study were 42 students that meet the inclusion and exclusion criteria. The inclusion criteria in this study subject were 5th graders (Age 10-11) in SDN Kompleks IKIP and IKIP 1, Muslim, had been screened overweight, willing to be given intervention, approved and supported by guardian threw to inform consent. Exclusion criteria were the subject does not experience pain or injury, taking certain medications that can result in the respondent had difficulty sleeping within 1 month before data collection.

Each group consists of 14 students. Endurance of running in place, jumping jacks, squats, jumping lunges. Strength of mt. climbers, plank jacks, and push ups. Sleep management in the form of sleep hygiene, DMT (prayer before bedtime), sleep quality and how to maintain a child's weight. The media have used parent pocket books and power points for samples. Group SM intervention in the form of sleep management is given once a week indoors for 60 minutes, 10 meetings as extracurricular subjects. CP interventions in the form of a combination of sleep management and physical activity was given for four times a week, one indoor and three outdoor times. Outdoor interventions were given physical activity for 20 minutes before entering the classroom or after school, 30 meetings. CT as a control group gets subjects of physical education by school teachers once a week. Interventions directly by researcher, assisted by enumerators and controlled by sports coaches.

Primary data were obtained through anthropometry measurement, direct interview and questionnaire, before intervention (I) and three months after intervention (II). Secondary data is obtained from school archives. Anthropometric measurements that include weight measurement using digital scales, for measurement of height using microtoise, and body fat measurement using Biometrical Impedance Analysis (BIA). Sleep quality is measured using the PSQI questionnaire. Nutrient intake was measured using SQ-FFQ.

RESULTS

Table 1: The Effect of Intervention on Nutritional Intake

Nutritional Intake	Time	Group			Total (n=42)	p[1)]
		SM (n=14)	CP (n=14)	CT (n=14)		
		Mean ± SD	Mean ± SD	Mean ± SD	Mean ± SD	
Energy (%)	Before	108.21 ± 6.32	103.93 ± 8.14	102.71 ± 9.98	107.29 ± 8.79	0.062
	After	106.14 ± 9.13	105.93 ± 11.31	101.93 ± 10.13	104.67 ± 10.17	0.508
	Δ	2.07 ± 5.75	5.00 ± 9.66	0.79 ± 4.91	52.38 ± 146.90	0.110
	P[2)]	0.201	0.075	0.560		

Cont... **Table 1: The Effect of Intervention on Nutritional Intake**

Protein (%)	Before	37.36 ± 12.47	41.07 ± 17.83	29.36 ± 10.41	36.45 ± 14.14	0.095
	After	44.57 ± 17.53	71.57 ± 28.40	29.14 ± 13.00	51.33 ± 23.72	0.000
	Δ	-7.21 ± 19.86	-30.50 ± 27.70	0.21 ± 9.12	-7.38 ± 13.75	0.008*
	P[2)]	0.197	0.001*	0.931		
Fat (%)	Before	94.86 ± 13.43	99.93 ± 17.77	83.07 ± 21.87	92.62 ± 18.98	0.106
	After	93.79 ± 17.45	91.57 ± 21.12	82.0 ± 20.65	89.12 ± 20.00	0.236
	Δ	1.07 ± 7.57	8.36 ± 10.08	1.07 ± 7.25	2.38 ± 6.17	0.008*
	P[2)]	0.605	0.008*	0.590		
Carbohydrate (%)	Before	100.14 ± 10.29	102.79 ± 17.34	85.21 ± 24.64	96.05 ± 19.56	0.058
	After	94.07 ± 23.40	80.50 ± 25.16	86.29 ± 31.25	86.95 ± 26.75	0.420
	Δ	6.07 ± 18.20	22.29 ± 15.59	-1.07 ± 18.07	25.71 ± 55.22	0.000*
	P[2)]	0.234	0.000*	0.828		

*significant p<0.05

p[1)] Anova between groups SM, CP, and CT

p[2)] Paired-samples T test between before and after intervention

The results of the nutritional intake analysis showed that the baseline and after intervention were no significant in all groups. However, the results test of each group significant in the CP group, increased nutritional intake protein -30.50% (p=0.001) and decreased fat 8.36% (p=0.008) and carbohydrates 22.29% (p=0.000) **(Table 2).**

Table 2: The effect of intervention on BMI for age, body fat percentage, and sleep quality

Effect of Intervention	**Group**			**Total (n=42)**	**p[1)]**
	SM (n=14)	**CP (n=14)**	**CT (n=14)**		
	Mean ± SD	**Mean ± SD**	**Mean ± SD**	**Mean ± SD**	
BMI (SD)					
Before	1.64 ± 0.35	1.57 ± 0.24	1.54 ± 0.33	1.58 ± 0.31	0.515
After	1.48 ± 0.47	1.36 ± 0.35	1.47 ± 0.40	1.44 ± 0.40	0.510
Δ Mean ± SD	0.15 ± 0.33	0.21 ± 0.31	0.06 ± 0.18	0.14 ± 0.28	0.206
P[2)]	0.102	0.027*	0.174		
Body Fat Percentage (%)					
Before	21.45 ± 4.46	20.69 ± 3.70	19.80 ± 3.59	20.65 ± 3.90	0.685
After	21.44 ± 4.51	20.16 ± 3.82	19.86 ± 4.18	20.49 ± 4.13	0.793
Δ Mean ± SD	0.01 ± 1.00	0.52 ± 1.03	-0,06 ± 1.13	0.15 ± 1.06	0.052
P[2)]	0.958	0.079	0.835		
Sleep Quality (Score)					
Before	8.36 ± 3.22	7.14 ± 1.87	8.5 ± 3.73	8.00 ± 3.03	0.536
After	3.86 ± 1.95	3.71 ± 1.06	7.43 ± 3.03	5.00 ± 2.74	0.001*
Δ Mean ± SD	4.50 ± 1.50	3.43 ± 0.93	1.07 ± 1.14	3.00 ± 1.87	0.001
P[2)]	0.000*	0.000*	0.004*		

*significant p<0.05

p[1)] Anova between groups SM, CP, and CT

p[2)] Paired-samples T test between before and after intervention

The results of the analysis show that baseline was generally no significant in all groups. Furthermore, after the intervention, BMI for age and body fat percentage no significant difference between groups SM, CP and CT. Significant differences in all groups were control variables, significant sleep quality (p=0.000). The test results of each group significant in the CP group. CP group there was a significant difference in the decreased of BMI for age of 0.21 SD (p = 0,027).

DISCUSSION

This study found that after intervention in the form of sleep management, BMI for age and body fat percentage of the subject there was no significant difference between group SM, CP and CT. However, the analysis of each group there was tendency towards decrease in BMI for age. Significant differences in the sleep quality, protein, fat and carbohydrate as control variables. The results of this analysis indicate that sleep management interventions and sleep management combinations with physical activity over a period of 3 months were not sufficient to decrease BMI and body fat percentage. But it has influenced sleep behaviour and subject food consumption patterns . A study in Australia showed that structured sleep intervention and sleep hygiene within 12 weeks had no effect on BMI, but were related to sleep behaviour and sleep quality[19].

Evaluation of the implementation of sleep management intervention has not been implemented optimally as expected. There were still some items in sleep management that sometimes do not work, such as the limits of television use, smart phone and subject bedtime, because it is less disciplined and less controlled by parents. The CP group experienced significant changes supported by a combination of physical activity in schools. This is supported by a study physical activity intervention 3 times a week within 8 weeks managed to reduce 0.6 SD in obese children[20]. Children who experience moderate fatigue usually get a good night's sleep, especially when fatigue is obtained from physical exercise[21]. Moderate to vigorous-intensity activities can make sleep more soundly, increase the amount of sleep time, and reduce awakening during sleep[22].

The study also found that after intervention there was no significant difference in body fat percentage, estimated that children were still doing sedentary activities, consuming energy-dense foods and sugary drinks contribute to fat accumulation in children[23]. The survey results that children were at the lowest level of physical activity, spend 50% of the time sedentary activity and only 6.7% meet physical activity. The impact on these risk factors was moderated by factors such as age, sex, residence status, parenting, and lifestyle[24]. Intake of nutrients after intervention intake of protein nutrients increased significantly CP group. Some research results indicate that a high-protein diet proves effective against weight gain prevention and for weight loss in overweight children[25].

CONCLUSION

There was no effect of sleep management and sleep management combination of physical activity on BMI for age and body fat percentage. However, there was tendency to decreased BMI for age, nutritional intake and improve sleep quality. It takes discipline to the management of sleep and longer intervention period and sustainability.

Acknowledgement: The research was fully supported by the Bogor Agricultural Institute and the Makassar City Education Office in terms of providing facilities for conducting this research. This research has obtained Ethical Approval from the Human Ethics Committee of Bogor Agricultural University No.028 / IT3.KEPMSM-IPB / SK / 2018.

Sources of Funding: Excellence Scholarship Bureau of Planning and Foreign Cooperation, Ministry of Education and Culture.

Conflict of Interest: All authors declared no conflict of interest within this study.

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DOI Numher: 10.5958/0976-5506.2018.01381.5

Occupational Health and Safety Risk Assessment in Chrome Production

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ABSTRACT

Background. In the Republic of Kazakhstan, there are large deposits of chromium. Thus, its production is an important part of country's industry. The job at such enterprises is connected with a certain health risk. The purpose of the study is to assess the physical condition of workers from Aktobe Chromium Compound Plant and to identify carcinogenic and other risks.

Methods. We have collected air samples and certain data on workers' physical condition from different departments at the plant to calculate indicators for assessing health risk for the population near production sites and for the workers.

Results. We have studied the level and structure of morbidity rates with temporary disability among workers of essential trades from Aktobe Chromium Compound Plant. We have determined the Spearman's rank correlation coefficient to assess the relationship between the air content (chromium compounds) at production sites and the morbidity rates (nosological forms).

Conclusion. The study of chrome pollution levels in production departments revealed departments with the highest pollution level. Occupational health and safety risk assessment allowed assessing the relation between working conditions of workers' physical condition objectively.

Keywords: *production risk; chromium; disability; pollution level; air pollution*

INTRODUCTION

There is one of the world's largest chromite ore deposits on the territory of Aktobe region[1]. There are large ferrochrome alloy and chromium compound plants. At present, the mining industry employs the majority of the working population – about 300 thousand people.

Chromium accumulates in tissues and blood[2]. The workers in contact with chromium compounds often have functional changes in physiological systems of the body, which in turn contribute to the risk of general and professional-related diseases.It adversely affects the skin, can cause lung cancer, including adenoidal cystic and osteogenic carcinoma, cardiovascular diseases, and gastric cancer. Comprehensive studies that were conducted in Central Europe found that the accumulation of heavy metals could cause renal cell carcinoma[3, 14-17].

Risk assessment is a probability determination of serious injury by identifying indicators related to safety and their quantitative assessment based on empirical data collected in the course of research activities. The priority of preventive measures at the design stage is an important principle[4].

Chrome compounds penetrate the body through the respiratory tract and mucous membranes and intact skin of the workers. The indicators of chromium status in

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human organism are its concentration in blood (26.6 - 31 mcg/l) and urine (7.9 - 9.8 mcg/l). The workers related to mono- and dichromate production are under higher risk.

The purpose of this study was to assess the air in industrial facilities and investigate the incidence rate among workers, with a view to determining the correlation between these two indices.

METHOD

The assessment of air samples that were taken from production facilities of the Aktobe Chromium Compound Plant (ACCP) was conducted in 2012-2014. Two main parameters were studied – air pollution by chromium-containing aerosols in production facilities, calculated as CrO3, and concentration of suspended materials in production facilities. The assessment of production environment factors was carried out by means of air aspirators M 822 and AM-5M (Labtekh, Russia) for air sampling. The devices were calibrated as of the moment of sampling.

Data collection and analysis on health indicators was conducted in accordance with the recommendations of Alpysbaeva Z. T. At that, we took into account the age, length of service, professional group, and sex of workers, as well as the standardized intensive indices of incidence rates by age, length of service, professional group, and sex, respectively[5]. To determine the combined effect of environmental factors on the risk level of professional use of modern appropriate methods of assessment. To assess the degree of association of the disease with the work necessary to analyze a pile conditions, a comprehensive assessment of the health of employees as well as expect the relative risk and etiologic fraction of "contribution" of production factors in disease development.

Health Risk Assessment was carried out according to "Methodology Guidelines for Assessing Human Risk from Chemical Hazards", provided by Nemenko B.A.[6]

Table 1: Key indicators for calculating occupational disease risks

Indicator	Calculation formula and symbols
Odds ratio	$OR_{шт}$= a:b/c:d=ad/(bc), Where: a – exposed worker with disease; b – not exposed worker with disease; c – exposed worker without any disease; d – not exposed worker without any disease
Absolute risk or attributive risk (AR)	**AR= p_1 - p_0**, Where: p_1 – morbidity rate in production departments; p_0 – morbidity rate in service departments; The absolute risk as a percentage is referred to as the attribute risk, and is calculated according to the formula: **AR% = (p_1 - p_0)/ p_1*100%;**
Lifetime average daily dose of penetrating compound	LADD=(LC*CR*ED*EF)/(BW*AT*250), Where: LC – concentration (mg/m^3, mg/l); CR – penetration rate (m^3/day, l/day); ED – exposure duration (experience rate); EF – exposure frequency (250 days); BW – body weight (kg); AT – time period over which the dose is averaged (days); 250 – working days in a tear;
Individual carcinogenic risk (ICR)	ICR = CDI □ SF, Where: CDI – chronic daily intake; SF – carcinogen slope factor
Population carcinogenic risk (PCR)	PCR = ICR × number of workers;
Hazard quotient	HQ=C_{actual}/RfC, **C – actual air concentration µg/m3;** RfC – reference concentration, µg/m3.

We determined the Spearman rank correlation coefficient to assess the relationship between the air content (chromium compounds) at production sites and the morbidity rates (nosological forms).

RESULTS

Air sample analysis, taken from production departments of Aktobe Chromium Compound Plant.

The investigation of the air pollution level in various departments of the compound plant found that the

concentration of dust in all facilities exceeded the norm significantly. Departments 4 and 5 had the relatively lowest concentration of dust in the air when compared to other departments. The pollution level in department 1 exceeded the norm significantly, making it the most polluted department, according to the obtained data (Table 2).

Table 2: Air pollution by chromium-containing aerosols, calculated as CrO_3, and suspended materials concentration in production departments

Department	Average air pollution level	AAQS	Dust level	AAQS
SMP-1, Department	0.014 mg/m³ – 0.016 mg/m³	0.01 mg/m³	1.17 mg/m³ – 1.77 mg/m³	4.0 mg/m³
SMP-2, Department	0.020 mg/m³ – 0.022 mg/m³	0.01 mg/m³	0.98 mg/m³ – 1.09 mg/m³	4.0 mg/m³
Department 3	0.007 mg/m³	0.01 mg/m³	0.85 mg/m³ – 1.44 mg/m³	4.0 mg/m³
Department 4	0.008 mg/m³ – 0.010 mg/m³	0.01 mg/m³	0.85 mg/m³ – 1.19 mg/m³	4.0 mg/m³
Department 5	0.008 mg/m³ – 0.010 mg/m³	0.01 mg/m³	0.63 mg/m³ -1.63 mg/m³	4.0 mg/m³

The maximum air pollution rate by chromium was found in roasting and filtration department and in wet-grinding mill designed for sodium monochrome production: SMP-1 in Department 2 (AAQS: 2.1 – 3.0) and SMP-2 in Department 2 (AAQS: 2.9 – 3.0), respectively. Therefore, the assumption is that the workers of these facilities will have a higher incidence rate when compared to those of other facilities with a lower pollution level.

Health status of workers in production departments of Aktobe Chromium Compound Plant. Health status assessment revealed that the most common diseases among the workers are acute respiratory disease (ARD), musculoskeletal system diseases, problems with digestive tract and inflammatory skin diseases.

The study showed that the dominating diseases were respiratory diseases, which is explained by the high level of air pollution in the working environment. The second-most common diseases were gastrointestinal and skin diseases, which confirms the negative impact of chromium compounds, especially those of hexavalent chromium, on chrome production facility workers. It is worth noting the high incidence of acute respiratory diseases (ARD) among the workers, which is explained by the high general level of respiratory diseases. The results are shown in Figure 1.

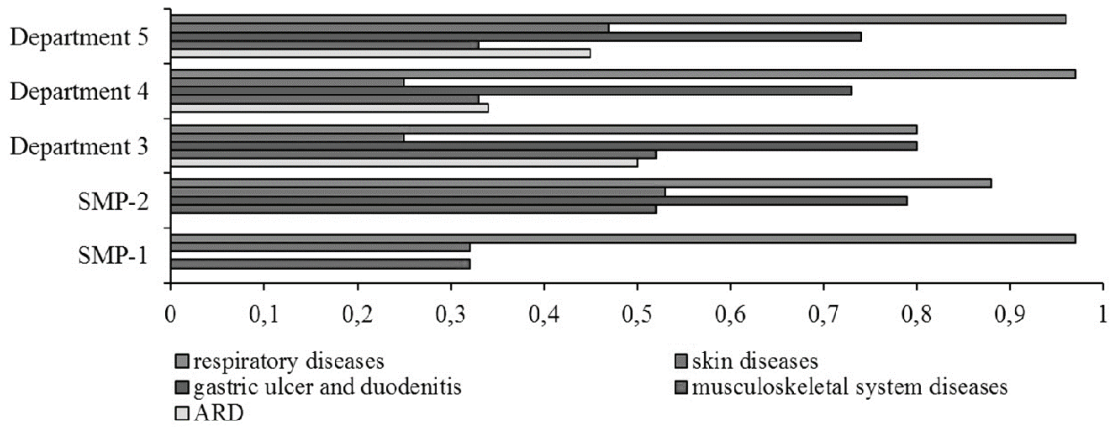

Figure 1. Spearman's rank correlation coeficient

According to these data, there is a strong correlation between occupational hexavalent chromium exposure and respiratory diseases and diseases of digestive system in all departments – the r ratio was, respectively, in the range from 0.8 to 0.97 (under $p < 0.05$) and in the range from 0.73 to 0.8 (under $p < 0.05$). The average correlation was determined for the following diseases: ARD (from $r = 0.3$ up to $r = 0.5$ under $p < 0.05$); musculoskeletal system diseases (from $r = 0.33$ to 0.52 under $p < 0.05$); inflammatory skin diseases (from $r = 0.25$ to $r = 0.5$ under $p < 0.05$).

These data prove that occupational hexavalent chromium exposure respiratory diseases and diseases of digestive system, as well as musculoskeletal system diseases, inflammatory skin diseases and ARD.

We calculated the average daily dose of penetrated hexavalent chromium. The largest average daily dose of penetrated hexavalent chromium was discovered in departments 1 and 5, which is explained by a high level of pollution of the working environment therein. This allows concluding that the concentration of carcinogenic hexavalent chromium in the air of the department exceeds the norm (Figure 2).

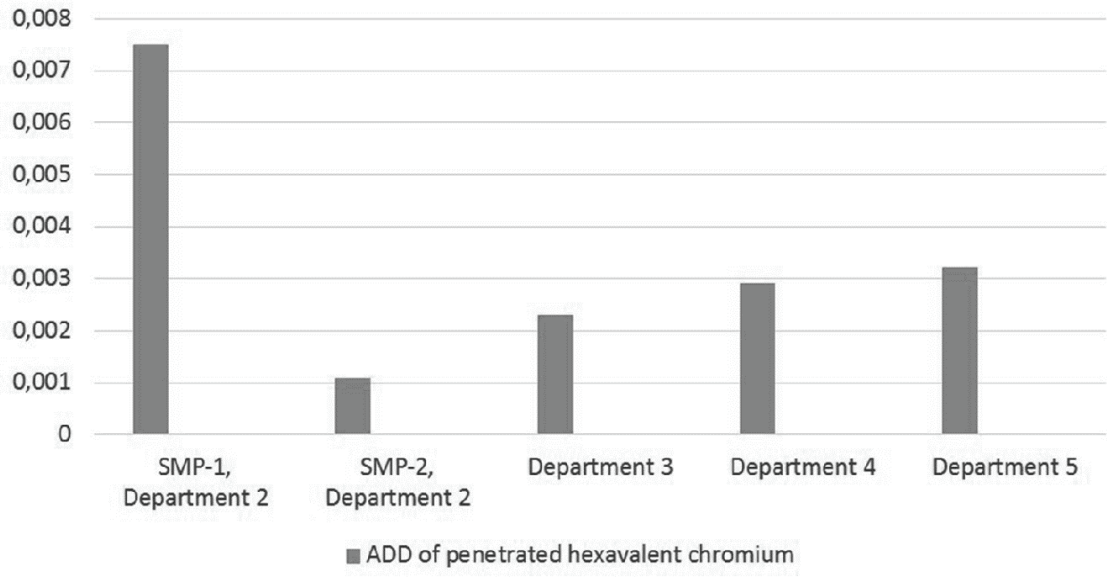

Figure 2. ADD of penetrated hexavalent chromium

We have determined that the priority diseases among workers of ACCP related to production pollution are diseases of digestive system. In particular, the workers engaged in SMP-2, SMP-1 in Department 2 are under a high risk of gastric ulcer and duodenitis; the second place – Department 4.

DISCUSSION

Heavy industry job affects the musculoskeletal system, namely, it results in back pain, which will be chronic[7].

The diastolic hypertension was found in about 20% of steel industry workers; the basic amount of workers (80%) have problems with fatness or overweight[8].

Hexavalent chromium is carcinogenic and provokes lung or liver cancer of male workers. High chromium status in the body was found in female workers. In consequence, there was a decrease in fertility in addition to certain problems with lungs and liver[9].

Chrome production has a detrimental effect on the human respiratory system. Miners are the most vulnerable, as they get the largest amount of chromium in the form of dust that settles in the lungs. In consequence, there will be cancer formation due to chromium compound exposure with lungs[10].

Mortality studies in chrome production workers showed that workers are in the middle of malignant

tumor formation in the lungs, intestinal tract, breast and prostate. Diabetes and Alzheimer's disease are also common disease causes[11]. We also have certain data on stomach cancer, caused by high chromium status[12].

Sewage water contains chromium. Inadequate wastewater depuration leads to a significant metal water pollution. In this case, chromium accumulates in the tissues and in agricultural plants. Soil irrigation with wastewater containing chromium results in its accumulation in vegetables, grown for human consumption[13]. Our data point to the great influence of the environment on workers' health status. These workers are in a group of potential medical problem owners in terms of digestive and respiratory diseases.

Data, obtained by our foreign colleagues and us, allows us to speak about a certain risk level in chrome production and processing. Accordingly, in our opinion, the engagement in chrome production should be clearly limited in time in a greater extent that the engagement in activities at other enterprises with eight-hour day. The workers shall be provided with a special protective clothes; everyone, who has access to chromium dust, should wear respirators and undergo medical check-ups that are more frequent. The personnel shall be

CONCLUSION

In monitoring hexavalent chromium-containing aerosol dynamics in workplace air, we have found that roasting and filtration department and wet-grinding mill designed for sodium monochrome production: SMP-1 in Department 2 (AAQS: 2.1 – 3.0) and SMP-2 in Department 2 (AAQS: 2.9 – 3.0) respectively are areas with the highest concentration of hexavalent chromium-containing aerosols.

Morbidity analysis with temporary disability has showed the dominating diseases: acute respiratory diseases, musculoskeletal system diseases, skin diseases and digestive system diseases. The highest morbidity rate was found in relation to workers engaged in SMP-1 in Department 2.

Correlation degree assessment between hexavalent chromium concentration in workplace air and the priority nosological forms has showed a significant dependence of respiratory diseases (r=0.8±0.03 – r=0.97±0.02) and digestive diseases (r=0.72±0.03 – r=0.8±0.03). Average correlation assessment – dependence of acute respiratory diseases, musculoskeletal system diseases, inflammatory skin diseases (r=0.45±0.01 – r=0.5±0.02).

The comprehensive risk assessment of production chromium pollution has shown the high risks in SMP-2 and SMP-1 in Department 2.

Conflict of Interest: The authors declare that they have no conflicts of interest.

Statement of Informed consent: All patients were informed of the study and agreed to process the results.

Statement of Human Rights: The rights of all patients have been complied with in accordance with the Helsinki Declaration of 1975, and with the amendments 2000.

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DOI Numher: 10.5958/0976-5506.2018.01382.7

Food Stalls Ownership and Its Contribution on Body Mass Index and the Risk of Cardiovascular Disease in Cooker Profession

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ABSTRACT

The importance of identifying cardiovascular disease risk factors can provide a major contribution to the prevention strategy for cardiovascular disease. This study was aimed to identify the prevalence of cardiovascular risk associated with the Body Mass Index and the ownership of food stalls. This study was a cross sectional study. A total 80 cookers as samples were determined by purposive sampling. Determination of cardiovascular disease risk using the Cardiovascular Jakarta Score, which is associated with food stalls ownership and body mass index. Data collection were conducted by health workers using questionnaires, measuring body weight and height. Data processing using SPSS version 20 for Windows, and analysis using Chi Square test with alternative Mann-Whitney test, at 95% CI and significant level $\rho<0.05$. The result of this study, as many as 52.5% of cookers are at high risk of cardiovascular disease. There was a significant relationship between the ownership of food stalls and the risk of cardiovascular disease. There was a tendency for cookers with abnormal Body Mass Index to experience a risk of cardiovascular disease. In conclusion, the ownership of food stalls contributes to an increase in body mass index and risk of cardiovascular disease for cooker in food stalls. Providing knowledge with mentoring methods is needed to control the risk of cardiovascular disease in cooker as informal sector workers.

Keywords: *Cardiovascular disease, Body mass index, Ownership of food stalls*

INTRODUCTION

Epidemiological transitions caused by industrialization, urbanization and lifestyle changes have resulted in an increase in the number of cardiovascular diseases sufferers[1]. Data obtained from WHO, each year the death rate caused by cardiovascular disease (CVD) is 17.7 million people each year or 31% of all global deaths[2]. Cardiovascular disease is now the cause of more than half of the global burden of disease and in Indonesia is expected to continue to increase until 2030 will reach 23.3 million deaths. In addition to causing pain and even death, losses caused by cardiovascular disease will also have an impact on the socio-economic life of the patient's family, society, and the State[3].

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A study resulted that the prevalence of heart disease in South Sulawesi Province was 0.8% diagnosed by health workers and 9.4% determined by health workers or symptoms. The prevalence of CHD suspects in South Sulawesi was 0.87% and was included in the moderate category with risk factors based on Jakarta Cardiovascular Score[4].

All professions have a potential hazard which can reduce the productivity of a worker. Hazard obtained in the workplace can come from the work environment, the tools and materials used, the work process, and also the workers themselves[5]. It can be concluded that work-related occupational accidents and diseases arise can be broadly divided into two causes, namely unsafe behavior and conditions. The largest percentage of causes of work-related occupational accidents and diseases is unsafe behavior reached 80%[6]. Several studies have proven that there is a significant relationship between

work and the incidence of cardiovascular disease in which the causative factors can originate from the work environment, such as noise factors, work stress, or caused by unhealthy lifestyles[7-13].

The cooker is one of the professions in informal sector which is at risk of having illness if it is associated with the work process. Research conducted by Bosu found the highest prevalence of hypertension in cookers, amounting to 68.9%[14] compare to other professions. Meanwhile, hypertension is one of the most important triggers of cardiovascular disease[15]. The relationship between work as cooker and the risk of cardiovascular disease, until now is still unclear. However, consumers who always consume ready-to-eat foods have greater risk factors for cardiovascular diseases, namely the Body Mass Index (BMI), waist circumference, cholesterol levels and acid serum concentrations compared to consumers who rarely or low consume fast food so it is recommended to limit these foods especially to people with high cardiovascular risk[16]. This study aims to determine the prevalence of cardiovascular disease risk associated with BMI and ownership of food stalls.

MATERIAL AND METHOD

This research was a cross sectional study, the determination of the sample by purposive sampling by using the proportion a study[17]. As a result, 80 of cookers were recruited as study participants in the work area of the Community Health Center of Tamalanrea. The study was conducted from March to May 2018 in Makassar City. The location was determined by considering the number of restaurants in the vicinity of densely populated housing and adjacent to the location of educational places. Data collection was carried out by using instruments consisting of the Cardiovascular Jakarta Score questionnaire, the characteristics of respondents, determinants of the body mass index and business ownership factors.

Characteristics of respondents consisted of gender, age (17-25 years; 26-45 years; 46-65 years), married status (married; single); education level (low: ≤ high school; high:> high school) and Tribe. BMI (≥ 18 to <25: normal; ≥25 is not normal)[18]. Food stall ownership is divided into two categories: as the owners and as a worker in food stall (not the owner).

Determination of cardiovascular disease risk by using Jakarta Cardiovascular score based on gender, age, blood pressure (JNC-VI criteria), smoking, diabetes mellitus, body mass index, and weekly physical activity. The sensitivity and specificity were high (77.9% and 90%, respectively). The positive predictive value was 92.2% and negative predictive value was 72.8% of Framingham study scores, with categories: Low Risk: (Jakarta Score <1), Moderate Risk: (Jakarta Score 2 - 4), High Risk: (Jakarta Score> 5)[19]. Measurement of body weight, height, blood pressure and diabetes mellitus status were carried out by health workers from the Makassar Regional Health Laboratory. Data processing was performed using SPSS v. 20 for Windows and analyzed using Chi Square test with an alternative Mann-Whitney test, at 95% CI and a significant level $\rho<0.05$.

RESULTS

Table 1 shows that gender, age, and marital status have a relationship with cardiovascular risk ($p<0.05$). The highest proportion of the cardiovascular risk was male. Likewise, age of 46-65 years and married status, compared to other groups. Although the level of education and ethnicity did not affect the cardiovascular risk, there was a trend of an increased risk of cardiovascular disease in both low and high education levels. In addition, Toraja and Javanese tribe tended to have cardiovascular risk compared to other tribes.

Table 1. Characteristics of Respondents based on Cardiovascular Risk, BMI, and Food Stall Ownership

Characteristics	Cardiovascular risk				BMI			Food stall ownership		
	Low n=17	Middle n=21	High n= 42	ρ N= 80	Normal n=32	Malnou-rished n=48	ρ N= 80	Owned n=31	Not owned n=49	ρ N= 80
Gender				**0,005**			0,853			0,397
Male	2 (5,9)	8 (23,5)	24(70,6)	34(100)	14(41,2)	20(58,8)	34(100)	15(44,1)	19(55,9)	34(100)
Female	15 (32,6)	13(28,3)	18(39,1)	46(100)	18(39,1)	28(60,9)	46(100)	16(34,8)	30(65,2)	46(100)
Age				**0,000**			0,598			**0,003**
17 – 25 yo	6(40,0)	5(33,3)	4(26,7)	15(100)	9(60)	6(40)	15(100)	0(0)	15(100)	15(100)
26 – 45 yo	11(26,8)	14(34,1)	16(39,0)	41(100)	12(29,3)	29(70,7)	41(100)	19(46,3)	22(53,7)	41(100)
≤ 46 yo	0(0)	2(8,3)	22(91,7)	24(100)	11(45,8)	13(54,2)	24(100)	12(50,0)	12(50,0)	24(100)
Marital status				**0,028**			1,000			**0,006**
Married	11(17,7)	14(22,6)	37(59,7)	62(100)	25(40,3)	37(59,7)	62(100)	29(46,8)	33(53,2)	62(100)
Not married	6(33,3)	7(38,9)	5(27,8)	18(100)	7(38,11)	11(61,1)	18(100)	2(11,1)	16(88,9)	18(100)
Education level				0,431			1,000			0,498
Low	16(22,9)	18(25,7)	36(51,4)	70(100)	28(40)	42(60)	70(100)	26(37,1)	44(62,9)	70(100)
High	1 (10,0)	3(30,0)	6(60,0)	10 (100)	4(40)	6 (60)	10(100)	5(50,0)	5(50,0)	10(100)
Tribe				1,000			0,965			0,609
Bugis/Makassar	4(30,8)	3(23,1)	6(46,2)	13(100)	5(38,5)	8(61,5)	13(100)	4(30,8)	9(69,2)	13(100)
Toraja	4(15,45)	6(23,1)	16(61,5)	26(100)	11(42,3)	15(57,7)	26(100)	11(42,3)	15(57,7)	26(100)
Jawa	4(19,0)	8(38,1)	9(42,9)	21(100)	8(38,1)	13(61,9)	21(100)	10(47,6)	11(52,4)	21(100)
Other	5(25,0)	4(20,0)	11(55,0)	20(100)	8(40)	12(60)	20(100)	6(30,0)	14(70,0)	20(100)

Body mass index (BMI) does not show a significant relationship with all characteristics variables. In Table 1, it can be seen that there is an increasing trend in each variable associated with the body mass index of respondents. The majority of respondents (60%) had malnourished status of BMI (≥25) except in the age group of 17-25 years (60%). Based on the ownership of food stalls, most of the respondents were in the category as not the owners (61.3%), with the largest prevalence in the group of respondents with not-married status (88.9%). There is a relationship between age, marital status and ownership of food stalls so that it can be said that age and marital status are very influential with the ownership of food stalls.

Based on Table 2, there is no relationship between ownership of food stalls and body mass index of respondents (0.111), but there is a tendency for food stalls owners to experience malnourished BMI (≥ 25) compared to respondents who are not food stall owners.

Table 2. Relationship between Food Stall Ownership and BMI

Ownership status	Body Mass Index			ρ
	Normal	Malnourished	N (%)	
Owner	9(22%)	22(71,0%)	31(100)	
Not as owner	23(46,9%)	26(53,1%)	49(100)	0,111
Total	32(40%)	48(60%)	80(100)	

In Table 3, the risk of cardiovascular disease was found in the group who had BMI more than 25 (60.4%) and those who owned food stalls (67.7%). Statistical test results showed a significant relationship between ownership of food stalls and risk of cardiovascular disease, but there was no significant relationship between BMI and the risk of cardiovascular disease. Although unrelated, there was a tendency for respondents who had BMI ≥ 25 to experience a risk of cardiovascular disease compared to respondents who had a normal BMI.

Table 3. Relations between BMI and Ownership of Food Stalls with Risk of Cardiovascular Disease

Variables	Risk of CVD			N (%)	ρ
	Low	Middle	High		
BMI					
Normal	11(34,4%)	8(25,0%)	13(40,6)	32(100%)	0,055
Malnourished	6(12,5%)	13(27,1%)	29(60,4)	48(100%)	
Total	17(21,2%)	21(26,2%)	42(52,5)	80(100%)	
Food stall ownership					
Owner	1(3,2%)	9(29,0%)	21(67,7)	31(100%)	
Not as owner	16(32,7%)	12(24,5%)	21(42,9)	49(100%)	0,006
Total	17(21,2%)	21(26,2%)	42(52,5)	80(100%)	

DISCUSSION

Cardiovascular disease currently is the cause of more than half of the global burden of diseases which its cases will continue to increase from year to year[20]. The results of this study indicate a significant relationship between sex and age with the risk of cardiovascular disease (ρ=0.05). Although some characteristics, such as marital status, level of education, and tribe have no relationship, there is a difference in proportion between marital status, level of education and aspects of the tribe with a high proportion of cardiovascular risk in respondents with married status (59.7%), high education level (university) (60%), and Toraja tribes (61.5%).

Epidemiological data have shown a shift in the prevalence of risk of cardiovascular disease in which males were dominant[21,22], but today, women also have a high prevalence[20,23]. Likewise, with age risk factors, where increasing age will be increasingly at risk of developing cardiovascular disease, but from some research results indicate a high prevalence not only in the elderly age group but also in various age groups[24,25].

An increase of cardiovascular disease every year cannot be separated from lifestyle factors such as excess nutritional intake, lack of physical activity and ignorance factors[23,26-28]. Cooker are one type of work in the informal sector, the majority of which are small-scale business management so that in general the work activities are carried out privately so that it certainly takes longer to be in the food stall. As it is known that one of the characteristics of informal sector workers such as food stalls cooker is a small-scale business and has little capital in their work, and most of these cooks are people who migrate from other regions in opening a business in overseas[29].

This is what drives the management of many food stalls by food stalls owners, starting from the preparation stage, the food management stage to the food serving stage, although from the research results most cooks are not food stall owners. Based on the results of the study, there is a very significant relationship between ownership of food stalls and risk of cardiovascular disease (ρ=0.006). Time to do routines such as exercise or rest even access to health services is reduced[3]. Longer working time can result in a person not having the time to interact with healthy living behaviors such as lack of rest time[30], lack of physical activity as high as having a high chance of getting cardiovascular disease[5,28].

The results of the study warn of the risk of cardiovascular disease experienced by more than half of the cooker (52.5%). It is necessary to control immediately to the risk factors of cardiovascular disease by providing knowledge about the prevention of cardiovascular disease risk[31,32], so that workers can get which is productive and will not provide the burden of morbidity, disability and socio-economic burden for the patient's family, the community and the state[3].

CONCLUSION

This study concluded that the food stalls ownership of the cookers contributes to an increase of body mass index and the risk of cardiovascular disease.

Sources of Funding: This study is funded by Indonesia Ministry of Research, Technology, and Higher Education

Ethical Clearance: This study obtained approval by Ethical Commission of Faculty of Medicine Hasanuddin University, number 768/H4.8.4.5.31/PP36-KOMETIK/2017.

Conflict of Interest: Nil

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DOI Numher: 10.5958/0976-5506.2018.01383.9

General Knowledge and Misconceptions about HIV/AIDS among the University Students in Malaysia

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ABSTRACT

This study was aimed to determine the general knowledge and misconceptions among the undergraduate students in a private university in Malaysia. Data was collected from a stratified random sample of 180 students using a validated questionnaire survey to assess the general knowledge and misconceptions about HIV/AIDS. The data was analysed by using the SPSS software and Chi-square test was used to find the *p*-value for each of the questions. The average mean score assessing the general knowledge of the students in was 82.32%, where the Health Science students scored 45.11% with a standard deviation of 0.017 and the Non-Health Science students scored 36.15% with a standard deviation of 0.026. When comparing each question using the Chi-square test, most of the answers of the Health Science students and Non-Health Science students showed a significant difference where the *p*-value was <0.05. From the results of this study it is clear that the Health Science students had better knowledge and fewer misconceptions than the Non-Health Science students.

Keywords: *General knowledge, Misconception, HIV/AIDS, students, Malaysia.*

INTRODUCTION

Human immunodeficiency virus infection and acquired immune deficiency syndrome (HIV/AIDS) is a spectrum of conditions caused by infection with the human immunodeficiency virus (HIV). The human immunodeficiency virus is a lentivirus that causes HIV infection and over time acquired immunodeficiency syndrome. HIV infection is one of the largest threat in the world. With only 5 percent of the Eastern and Southern African, it is home to half of the world's population living with HIV. In recent decades, HIV/AIDS has been working its magic up into society, spreading like an unstoppable cancer, almost to the point of it being immortal. The cumulative number of HIV cases in Malaysia went up to 101,672 cases by the end of 2013 [1]. Due to lack of adequate information, youths are more exposed to infection as they engage in risky sexual practices [2].

There are few studies that have examined potential differences in knowledge and misconception towards HIV/AIDS. In Malaysia, talks and awareness programs about HIV/AIDS are held at secondary schools regularly. However, there are new cases of HIV/AIDS arising among people every year. This could be caused by low level of knowledge regarding HIV/AIDS. This shows that the awareness programs held at school levels alone is not enough to prevent this disease from spreading. However, these studies have been limited to compare integrated knowledge and misconceptions of the Health Science and Non-Health Science students. Health Science students may have a better exposure to gaining knowledge about

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this disease since it is a part of their curriculum whereas it is not the case for Non-Health Science students. It is of utter importance that both Health Science and Non- Health Science undergrads are equipped with the knowledge of HIV/AIDS. Thus, the knowledge and misconceptions about this disease among university students should also be assessed. Therefore, the aim of this study was to determine the general knowledge and misconceptions among the Health Science students and Non-Health Science students about HIV/AIDS in Lincoln University, Petaling Jaya, Selangor, Malaysia.

MATERIALS AND METHOD

Study design	**Descriptive, cross sectional study**
Study population	Undergraduate students from Lincoln University, Petaling Jaya, Selangor, Malaysia.
Sample Size	Total 180 among which 90 are Health Science students and 90 are Non- Health Science students
Inclusion and exclusion criteria	Malaysian students aged between 18-25 years old were included. The students under 18 and above 25 years old were excluded.
Study survey instrument	Self-administered validated questionnaire
Data Collection	The self-administered questionnaire was distributed and collected personally
Statistical analysis plan	All statistical analyses were performed using SPSS

RESULTS

The Table 1 shows the demographic characteristics of the total participants. The evaluation was conducted with 180 students of both Health Science and Non-Health Science.

Table 1: Demographic characteristics of the total participants (n=180)

Characteristics	**Total (n=180)**	**Health Science (n=90)**	**Non-Health Science (n=90)**
Age (y), mean (±SD)	21.65 (±1.655)	21.18 (±1.481)	21.08 (±1.892)
Gender, n (%)			
Male	52 (29.2%)	26 (28.9%)	26 (28.9%)
Female	128 (70.8%)	64 (71.1%)	64 (71.1%)
Marital status			
Single	180(100%)	90 (100%)	90 (100%)
Married	0 (0%)	0 (0%)	0 (0%)
Widowed	0 (0%)	0 (0%)	0 (0%)
Divorced	0 (0%)	0 (0%)	0 (0%)
Separated	0 (0%)	0 (0%)	0 (0%)
Religion			
Muslim	66 (36.2%)	36 (38.9)	30 (33.3%)
Christian	28 (15.6%)	15 (16.7)	13 (14.4%)
Buddhist	42 (23.8%)	16 (18.9)	26 (28.9%)
Hindu	40 (22.2%)	21 (23.3)	19 (21.1%)
Others	4 (2.2%)	2 (2.2)	2 (2.2%)
Race			
Malay	60 (33.3%)	30 (33.3%)	30 (33.3%)
Chinese	60 (33.3%)	30 (33.3%)	30 (33.3%)
Indian	60 (33.3%)	30 (33.3%)	30 (33.3%)

SD denotes standard deviation, n denotes number of participants, y denotes years

From Table 1, we can see that the mean age of the total participants was 21.65 years and its standard deviation is 1.655 years. Among the participants, 90 of them were Health Science students (50%) and 90 of them were Non- Health Science students (50%). The participants were composed of 52 (29.2%) males and 127 (70.8%) females. The participants were all Malaysians from the three major races in Malaysia (Malay n=60, Chinese n=60 and Indian n=60). The marital status of all participants is single. Among all the 180 participants, majority were Muslims 66 (36.2%) followed by Buddhists 43 (23.8%), Hindus 40 (22.2%), Christians 28 (15.6%) and others (2.2%).

The Table 2 shows the frequency and percentage of correct answers and wrong answers among the participants based on faculty of the students.

Table2: Questions on general knowledge on HIV/AIDS

Variables	**Correct Answers**		**Wrong Answers**		***p*-value**
	Health Science	**Non-Health Science**	**Health Science**	**Non-Health Science**	
General Knowledge					
1. AIDS abbreviation	85 (47.2%)	55 (31.2%)	6 (3.3%)	33 (18.3%)	0.000
2. AIDS a transmittable disease	82 (45.6%)	75 (41.7%)	5 (2.8%)	15 (8.3%)	0.018
3. AIDS a hereditary disease	64 (35.6%)	36 (20.0%)	27 (15.0%)	54 (30.0%)	0.000
4. AIDS cured at this moment	82 (45.6%)	74 (41.1%)	8 (4.4%)	16 (8.9%)	0.079
5. There is a vaccine for AIDS Attitudes	64 (35.6%)	47 (26.1%)	26 (14.4%)	43 (23.9%)	0.009

The table 2 showed that among the 5 questions regarding the general knowledge for HIV/AIDS, all the frequency and also the percentage of correct answers was higher in Health Science students (30.0%-50.0%) as compared to Non-Health Science students (20.0%-45.0%). In other words, the frequency and percentage of wrong answers was higher in Non-Health Science students (5.0%-30.0%) than in Health Science students (4.4%-15.0%). Significant differences were observed between the answers given by Health-Science students and also Non-Health Science students.

In Table 3, the frequency and percentage of correct and wrong answers among the participants based on their experience in science are reported (Health Science and Non Health Science Students). The table showed 5 questions related to the misconceptions about HIV/AIDS.

Table 3: Questions on misconceptions about HIV/AIDS

Variables	**Correct answers**		**Wrong answers**		***p*-value**
	Health Science	**Non-Health Science**	**Health Science**	**Non-Health Science**	
Misconceptions					
1. Love is a reason for HIV/AIDS	85 (47.2%)	71 (39.4%)	9 (5.0%)	14 (7.8%)	0.264
2. AIDS is a punishment of God	80 (44.4%)	65 (36.1%)	10 (5.6%)	25 (13.9%)	0.005
3. AIDS can treat by holy water	81 (45.1%)	82 (45.6%)	5 (2.8%)	8 (4.4%)	0.388
4. AIDS do not come after marriage	79 (43.9%)	71 (39.4%)	11 (6.1%)	19 (10.6%)	0.110
5. AIDS can be transmitted by the cough	81 (45.0%)	70 (38.9%)	9 (5.0%)	20 (11.1%)	0.026

From this Table 3, we can see that the frequency and percentage of correct answers was higher in Health Science Students compared to Non-Health Science Students and vice versa for the wrong answers. The majority of Health Science respondents had less misconception about HIV/AIDS, with 75-85% correctly answering the five statements. However, many misconceptions were still noted relating to HIV/AIDS, such as "AIDS is a punishment of God", "AIDS can be transmitted by cough" and "AIDS do not come after marriage" which at least of more than 10% of Non-Health Sciences Students had answered incorrectly.

The Table 4. represented the mean and standard deviation of all the other tables (Table 1, 2 and 3).

Table 4: Total Average of All Variables

Variables	Correct answers		Wrong answers	
	Health Science	Non-Health Science	Health Science	Non-Health Science
General Knowledge	44.12% (±0.062)	32.12% (±0.094)	8.90% (±0.062)	17.88% (±0.094)
Misconceptions	46.10% (±0.013)	40.44% (±0.036)	4.70% (±0.013)	9.56% (±0.036)
Mean (±SD)	45.11% (±0.017)	36.15% (±0.026)	6.80% (±0.018)	12.83% (±0.036)

SD denotes standard deviation

DISCUSSION

As far our knowledge, this is the first descriptive, cross-sectional study conducted to determine the general knowledge and misconceptions of HIV/AIDS among the Health-Science students and Non-Health Science students in Lincoln University. Since HIV is a very common infection, it is important that people should have ample knowledge and awareness about HIV/AIDS. This study could have a positive impact on raising awareness of HIV/AIDS knowledge and misconceptions among undergraduate students in Malaysian Universities. Educational awareness programs about HIV/AIDS have been one of the key measures in controlling the infection, as they promote the healthy life style of the general public [3, 4]. The study reveals several findings about the general knowledge and misconceptions among Health Science students and also Non-Health Students in Lincoln University.

GENERAL KNOWLEDGE

About 78% of the respondents of both branches (Health Science students and Non-Health Science students) had a clear understanding about the abbreviation used for HIV/AIDS. The Health Science students had answered more correctly and possess a better knowledge of HIV/AIDS than the Non-Health Science students. Both the groups had good knowledge about AIDS which cannot be cured having a high percentage of correct answer.

About the concept of "AIDS is a hereditary disease" and "there is a vaccine for AIDS", the Health Science percentage of answering correctly was higher as compared to Non-Health Science percentage. In our study, however about 20%-35% of the respondents thought that AIDS is not a hereditary disease whereas about 26%-36% of the respondents thought there was no vaccine available for AIDS. Thus, overall the respondents had good knowledge about the abbreviation of AIDS, AIDS transmission and its curing except they lack knowledge of AIDS being a hereditary disease and whether there is a vaccine available for AIDS. A similar study was conducted in Tanzania; it spoke about three quarters of the respondents demonstrating comprehensive knowledge about HIV/AIDS [5, 6]. In contrast, a study conducted in Saudi Arabia showed the overall mean knowledge score of the respondents was 5.2 correct answers out of 9. However, in this study a low knowledge level of HIV/AIDS was found among the medical and non-medical students [7]. Another study that was conducted among Sudanese University students stated that the participants had poor knowledge about HIV/AIDS [8]. Therefore, it is important to consider taking initiative in setting up various centres in order to instil a basic knowledge about the disease all around the world so that as to eliminate the stigma surrounding this

disease.

Misconceptions

It is very common to have some misconception about HIV/AIDS in any population. Misconception about HIV may cause a negative attitude towards people suffering from this serious disease that could lead to serious harm on their physical and emotional state. Misconception is a major barrier to control and prevent the spread of AIDS[9, 10].

Since Malaysia is a conservative country where it is not encouraged to talk about sexual issues, the expected rate of misconceptions is very high. This is also the same with other conservative countries like Sudan for example where it is rare for parents to discuss sensitive topics such as STDs with family members [11]. But our study revealed that most of the respondents didn't have a lot of misconceptions about HIV/AIDS. However, our findings showed that the Non-Health Science respondents had a higher percentage of misconceptions than the Health Science respondents.

The highest misconceptions from both populations were with the statements "AIDS is a punishment of God", "AIDS do not come after marriage" and "AIDS can be transmitted by the cough". Even though Malaysia is a religious country, for the statement "AIDS is a punishment of God" only few participants 10 (5.6%) from Health Science and 25 (13.9%) from Non-Health Science had incorrect answers. Other studies however, have shown that there was a higher percentage of people who believe that AIDS is a divine punishment from God [4, 8]. Also comparing to a study done in Sudan for the statement "AIDS do not come after marriage", 11 (6.1%) participants of Health Science and 19 (10.6%) participants of Non-Health Science answered incorrectly. Finally, for the statement "AIDS can be transmitted by the cough", 9 (5.0%) participants of health science and 20 (11.1%) of non-health science answered incorrectly. A study conducted earlier in Japan showed that fear, lack of knowledge, or religious beliefs, negative attitudes towards HIV/AIDS patients can lead to stigmatization of the disease [12]. It is very important to take action in order to get rid of these misconceptions that people have towards HIV and AIDS. South Africa has set an interesting example in implementing HIV/AIDS prevention programs including community-based HIV awareness programs and education campaigns, research on HIV prevention together with the introduction of anti-retroviral therapy (ART). This comprehensive approach has led to increased knowledge within the community which reduced the social stigma and led again to better uptake of voluntary counselling and HIV testing [13]. The Malaysian government could take up few of these above examples so as to create better awareness and knowledge among the population of the country.

CONCLUSION

The major findings of this study were that the Health Science students had better knowledge and fewer misconceptions when compared to Non-Health Science students. This study draws a general picture of student population's knowledge and misconceptions towards HIV/AIDS. Though the SEGi student population had a good knowledge background, there were few misconceptions that need to be addressed. However, Furthermore, from the study we come to a conclusion that despite the knowledge that the students possess it is important to raise awareness about this disease, and this can be done by taking initiative in conducting campaigns, awareness programs, educational speeches, hosting fundraising events, produce information pamphlets and through social media awareness.

Ethical Clearance- Taken from ethical committee of Faculty of Science, Lincoln University, Petaling Jaya, Selangor Malaysia. All the respondents were given a consent letter to read, accept and sign before they fill the questionnaire.

Source of Funding- Self

Conflict of Interest - Nil

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DOI Numher: 10.5958/0976-5506.2018.01384.0

Supportive Group Therapy as a Prediction of Psychological Adaptation of Breast Cancer Patients Undergoing Chemotherapy

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ABSTRACT

Background. Breast cancer is the main cause of death for women. One of the therapies for breast cancer is chemotherapy. Chemotherapy has physical and psychological side effects. Patients need to adapt in order to be able to follow the process of chemotherapy treatment, and supportive group therapy is one of the ways to improve adaptation ability of patients. The aim of this study was to analyze supportive group therapies in improving the psychological adaptation of breast cancer patients undergoing chemotherapy.

Method. This study uses pre-experimental one group pretest-posttest design. The sample consists of 35 respondents that were divided into 3 groups during the treatment. Pre-test and post-test were conducted to each group by using Likert scale. This study uses sampling technique of purposive sampling with inclusion criteria.

Results. Before supportive group therapy is conducted, the average score of the respondents are 35,85 meanwhile after the supportive group therapy is conducted the average score increases to 43,82. The statistical analysis by using paired t-test shows that p-value .000 < 0,05 and this demonstrates that the supportive group therapy can improve psychology adaptation of breast cancer patient who undergone chemotherapy.

Conclusions. Supportive group therapy can be an alternative to support the breast cancer patients to adapt and undergone chemotherapy.

Keywords*: Chemotherapy, Supportive group therapy, psychology adaptation*

INTRODUCTION

Cancer is one of the deadliest disease worldwide1,2. According to the data from International Agency For Research On Cancer (IARC) of the year of 2012, there were 4,1 million new cases of cancer with the mortality rate of 8,2 million1,3,4. The data on mortality caused by cancer worldwide demonstrates that the most commonly diagnosed cancer type for men is lung cancer (30%). For women, the most commonly diagnosed cancer types are cervical cancer while breast cancer (12,9%) is in the second position1,3,5.

According to the study entitled Surveillance and Health Service Research from American

Cancer Society 2012, breast cancer is an oncology case that often occurs to women. There are approximately 1.7 million breast cancer patients throughout the world and 521,900 of them has passed away6,7. Breast cancer contributes 25% of the total cases of cancer and it is responsible for 15% of female deaths due to cancer worldwide6,7. According to the study from Cancer Epidemiology Biomarker, there are 1.7 million cases of breast cancer worldwide, 39% of the patients are from Asia, 29% in Europe, 15% in Amerika, 8% in Afrika, and 1.1 % in Australia. Based on such data, Asia is the

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continent with the highest percentage of breast cancer patients6,7.

Cancer patient should get a treatment to reduce metastasis of cancer cell in order to prevent the cancer spread to other body parts which may cause death 2,8,9. Chemotherapy is very important in cancer treatment besides radiation, surgery, as well as the injection of cytotoxic and anticancer. These are the main treatments which required to eliminate the cancer cells from the body10. However, the use of anti-cancers often have a side effect which harming the patients10. The use of chemotherapy has various impacts, including physical and psychological impacts.

Side effects of chemotherapy arise because the substances are very strong and such substances do not only kill cancer cells, but also attack healthy cells, especially cells that divide rapidly, such as hair cells, spinal cord, skin, mouth and bones and digestive tract9,11. In addition, the psychological impact that arises out from chemotherapy makes the majority of cancer patients worry, anxious, and fear of facing the threat of death and pain during the chemotherapy treatment5,11. This psychological response varies from person to person, it really depends on the stage of the cancer, the type of treatment being carried out and the characteristics of each patient7,12. The psychological impacts which often experienced by breast cancer patients undergoing chemotherapy are the feeling of helplessness, anxiety, shame, decreased self-esteem, stress, and anger13,14. Efforts should be made to improve coping mechanisms for cancer patients so that the result of the chemotherapy will be more optimum. The study conducted by Spahni, Bennett & Perrig, 2016 suggests that a person's adaptability is strongly influenced by the maturity and maturity of a person's age15–17. Psychological adaptation of patients with chemotherapy requires support from all parties, both from family, friends, and healthcare providers13,16,18. This is important so that during the chemotherapy the patient will be able to receive all the side effects of the treatment15,19. According to Clessen, et.all 2008, psychological changes in cancer patients can be adapted to supportive group therapy5,20. Another study conducted by Yavusyen et al. (2012) suggests that support groups therapy can improve the life quality of breast cancer patients5,21,22.

Material and methods

Design

This study uses pre-experimental with pre-post test which designed to examine whether supportive group therapy can improve the psychological adaptation ability of patient who undergoing chemoterapy[23,24].

Sample

This study involves 35 breast cancer patients as the respondents who undergo chemotherapy at the chemotherapy center at Jember Hospital, Indonesia. The sample is divided into 3 groups, each group consists of 12 or 11 people. Such division is intended to make the interaction among the patients more effective[25,26]. The characteristic of sample in this study is a patient with breast cancer level II or III, who has undergone chemotherapy for more than 3 times, co-operative and able to communicate verbally, and agree to be a respondent. While exclusion criteria that used to eliminate confounding variable is the breast cancer patient level II and III who has complications due to cancer. This study used *purposive sampling*, which is a self-determined sampling technique which adjusted with the specified criteria[23,26].

Measurement

The data collection procedures from 35 samples are divided into small groups with each group member as many as 11-12 people. Each group is accompanied by cancer therapists and volunteers. Interventions are carried out in 1 meeting by combining 4 sessions in one meeting. Data collection on psychological adaptation was conducted twice, namely before supportive group therapy and after intervention. The therapy is conducted in a quiet room, for 90 minutes. Assessment of the psychological adaptation of respondents includes cognitive, affective and psychomotor assessment using a Likert scale[26].

Data analysis

In order to analyse the different group by using paired sample t-test, with value of alpha $< 0,05$[25,26]. Previously, data normality tests were conducted on the two groups[26].

RESULTS

Table 1. Respondent Demographic Data Frequency Distribution

Demographic Data	f	(%)
Age		
<40 years	1	2,9%
40 – 50 years	16	48,6%
>50 years	18	51,4%
Education Degree		
Elementary	21	60,0%
Junior High	6	17,1%
Senior High	7	20,0%
Bachelor Degree	1	2,9%
Marital Status		
Single	1	2,9%
Married	27	77,1%
Widow	7	20,0%
Religion		
Islam	35	100%
Occupation		
Civil Servant	3	8,6%
Employee	4	11,4%
Enterpreneur	10	28,6%
Farmer	4	11,4%
Housewife	14	40,0%
The frequency of chemotherapy		
5 times	9	25,7%
6 times	8	22,9%
7 times	8	22,9%
8 times	5	14,3%
9 times	4	11,4%
10 times	1	2,9%
Breast cancer level		
3	20	57,1%
2	15	42,9%

Based on the analysis of respondents demographic data, most respondents (18 respondents) are >50 years old with the percentage of 51,4%. While the highest chemotherapy frequency is 5 times with the total of 9 respondents (25,7%). Most of the respondents are in level 3 of breast cancer, with the total of 20 respondents (57,1%) (Table 1).

Table 2 Frequency Distribution of Respondents Based on the status of psychological adaptation of breast cancer patients before and after *supportive group therapy*

Value	Before *Supportive Group Therapy*	After Supportive Group Therapy
Minimum	29	34
Maximum	42	52
Mean	35.85	43.82
Median	36.00	44.00
Std. Deviation	2,475	4,768

Based on the table 2, to analyse paired t-test, normality data test is conducted by using Shapiro wilk test with significance of 0.05[27] and the result shows that the score for pre-test and post test are > 0.05, thus, it can be concluded that the variables are distributed normally[26,27].

Table 3 Analysis of the effect of supportive group therapy on psychological adaptation of cancer patients undergoing chemotherapy.

Psycho-logical adaptation	N	Min	Max	Mean	Median	Std. Dev-iation	p-value
Pre-test	35	29	42	35.85	36.00	2,475	0.000
Pos-test	35	34	52	43.82	44.00	4,768	

The results of the analysis using paired t-test suggest that P value is 0.000 <0.05 and thus, supportive group therapy can improve the adaptation of patients undergoing chemotherapy (Table 3).

DISCUSSION

Adaptation ability of a person is also depending on the age, the more mature, the more mature the meaning of life will be. So they will be wiser in responding to any stressors[28]. The results of this study indicate that most respondents are in middle adulthood. According to Hurlock (2009), middle adulthood is a transition period and a period of readjustment with behavioral patterns that have been carried out in early adulthood with physical and psychological changes occurring in middle

age[17,29]. This result corresponds to a study conducted by Khariyatul (2017) which shows some factors that affecting adaptation ability, which is the age of the respondent who are more than 50 years old, and thus age greatly affects the adaptability of breast cancer patients undergoing chemotherapy[28,30].

Another factor that affects the adaptation ability is marital status. According to Pamungkas (2011), the participation of families and those around the patient to provide life support for breast cancer patient will be very significant. The family must take care so that the patient does not experience stress and depression of the disease they are suffering from. The research conducted by Nurhidayati, T. & Rahayu, D. A. (2017) shows that the support of partners are obtained in the form of instrumental, appreciation, emotional support and information[5].

The results above show that average score of psychological adaptation of respondents after (post-test) supportive group therapy is conducted increase to 43.82, with the minimum score of 34 and the maximum score of 52 and thus, it can be qualified as 'adaptive' and the standard deviation is 4,768. This result demonstrates that the breast cancer patients undergoing chemotherapy are more adaptive in addressing the disease. This result corresponds to the study conducted by Nurcahyani, Dewi, & Randhianto (2016) which focuses on the effect of group supportive therapy on anxiety. Adaptability can also be influenced by one's religion and beliefs[5]. At the age of 50-60 years the level of religiosity is higher because good religiosity can affect a person's acceptance of his condition so that patients will be more adaptive. The higher the religiosity the lower the depression level, and vice versa[31].

The result from the t-test analysis on 35 respondents shows that the p score is .000 <0.05, thus H1 is accepted, which demonstrates that there is a correlation between supportive group therapy and the psychological adaptation of breast cancer patients undergoing chemotherapy. Supportive group therapy is a therapy that is carried out using peer groups who have relatively similar problems by sharing information about the problems experienced as well as solutions that need to be taken while the process of mutual learning and strengthening is very effective if done so that patients can adapt to their current situation[5,11,28,32]. According to the results of Yafuzsen's research, et al, (2015) supportive therapy groups has an influence on the changes in self-esteem between the intervention group and the control group[32].

CONCLUSION

Supportive group therapy can be an alternative for the healthcare providers to improve the psychology adaptation in order to support the healing process. This therapy can be conducted along with other therapies which performed by a professional healthcare provider.

Ethical Clearance: This study has passed the institutional review board from Faculty of Health Sciences, Universitas Muhammadiyah Jember.

Source of Funding: This study is self-funded research project.

Conflict of Interest: None

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DOI Numher: 10.5958/0976-5506.2018.01385.2

The Effectiveness of "Neherta" Model as Primary Prevention of Sexual Abuse against Primary School Children in West Sumatera Indonesia 2017

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ABSTRACT

Background: sexual abuse against elementary school children occurs in many countries around the world, including Indonesia. A module of " Neherta " model is one of intervention model of sexual abuse prevention that can be provided for primary school children. **Aim & Objective**: To know the effectiveness intervention Module of sexual abuse prevention against Children from "Neherta" model. **Material & Method**: Research Design Quasi-Experiments type Times Series Design with 864 samples. The study was conducted in Batusangkar City from Mei 2017 to November 2017. Data is analyzed using average grade of knowledge and attitudes of primary school-aged children. it proved by the results of multivariate tests, with a value of P = 0.00. **Conclusions**: Modules of the "Neherta" model proved to be effective increasing the average value of knowledge and elementary school-aged children's assertiveness in West Sumatra. It is recommended to test the module from the "Neherta" model in elementary school children outside West Sumatra.

Keywords: *Neherta model, sexual violence, elementary school age children, intervention.*

INTRODUCTION

Primary prevention by providing direct intervention to children in a school-based are efficient and effective. this is effective because it will involve several prevention strategies, such as community, teachers, students, parents and other environments around [1, 2]. one of the effective intervention modules is "Neherta" model which is made through the long stage as a result of doctoral dissertation[3].

The module of "Neherta" model is one of the best intervention modules to increase knowledge and assertiveness of school-age children[3]. The learning method of this model based on school-age characteristics which are love to play and sing. it uses presentations, story discussions, pictorial sketches, video, roleplay, leaflet and singing with a minangkabau lyric as the learning media "Neherta" The learning method of this model based on school-age characteristics which are love to play and sing. it uses presentations, story discussions, pictorial sketches, video, roleplay, leaflet and singing with a minangkabau lyric as the learning media [3]. with a variety of learning, media will make them enjoy the lesson. therefore the purpose of this research is to see the effectiveness of "Neherta" model toward elementary school students in West Sumatra

MATERIAL AND METHOD

This is quantitative research using quasi-experiments design with times series design. the population in this study are all the elementary student in West Sumatra with +819660 students. the sample in this study based on a krejcie table with 5% error is 864 students. The sample was selected randomly with multistage random sampling framework, ranging from a city, and sub-district and Nagari. The sample selected by purposive sampling, it only take students on the 3rd year, 4th year and 5th year, with inclusion criteria: respondents always attend the class, health both physical and spiritual

The intervention did 3 times for 2 months with 4 times measurement, they are the average of knowledge and the average of assertive attitude from the respondent. the data were analyzed by general linear model repeated measure. this study done in elementary school in West Sumatra for 9 months, started in mei until November

2017. this study was funded by the research unit of nursing faculty of Andalas University

Respondents are divided into 3 groups

a. respondent that came from district/city area

b. respondent that came from sub-district area

c. respondent that came from Nagari

- all groups are given the same intervention using "Neherta" model
- the interventions are given by teachers from their school
- All teachers that give the intervention have been trained
- the interventions are given 3 times for 2 months with 4 4 times of measurement,: pre-intervention measurement, after the first intervention, after the second interventions, and after the last intervention

The intervention of knowledge that given to children are

- 4 important and secret part of their body
- they are allowed to say "no"
- the seduction pattern used by the sex offender
- perpetrators of sexual abuse against children
- what should their do if they have been victimized[3]

FINDINGS

this study followed by 864 respondents and divided into three groups, the 1st group is a group that came from district/city area, the 2nd group is respondent that came from sub-district area and the last respondent is respondent that came from Nagari. the intervention is given 3 times with the same intervention, using 'Neherta' model. the interventions are given by their own respondent's school teacher. All teachers that give the intervention have been trained by researcher and they gave the similar perception by researcher it takes students on the 3rd year, 4th year and 5th year. consist of 61% women and 39% men. 30% respondents are 9 years old, 38% respondents are 10 years old, 28% respondents are 11 years old and 4% respondents are 12 years old. all respondents are Muslim from normality result test using Kolmogorov-Smirnov test known that the data normally distributed, so the data processing using General Linear Model Repeated Measure analysis can be used. The data shows the increase of average value in knowledge and assertive attitudes of respondent after receiving the intervention. the increase of average value in knowledge and assertive attitudes occurred in all groups of intervention respondent. to prove the increase of average value in knowledge and assertive attitudes of these 3 groups can be seen in hypothesis test in table 1.

Table 1: Statistical test results on the average increase of Knowledge and Attitude

Assertif between the three groups of respondents in 4 times the measurement.

Multivariate[a,b]							
Within Subjects Effect		**Value**	**F**	**Hypothesis df**	**Error df**	**Sig.**	**Partial Eta Squared**
factor1	Pillai's Trace	.822	600.502	6.000	5166.000	.000	.411
	Wilks' Lambda	.193	1099.092[c]	6.000	5164.000	.000	.561
	Hotelling's Trace	4.109	1767.547	6.000	5162.000	.000	.673
	Roy's Largest Root	4.090	3521.868[d]	3.000	2583.000	.000	.804
factor1 * KLP	Pillai's Trace	.012	2.496	12.000	5166.000	.003	.006
	Wilks' Lambda	.988	2.501[c]	12.000	5164.000	.003	.006
	Hotelling's Trace	.012	2.505	12.000	5162.000	.003	.006
	Roy's Largest Root	.011	4.696[d]	6.000	2583.000	.000	.011

Table 1 is multivariate result test, the test is to know the existence of the increase of the average value in knowledge and attitudes assertive of respondents in the three research groups. From table 4 can be seen that the increase in average knowledge and assertive attitude of respondents did rise. This increase is found in the three groups, where the increase occurs one week after getting the intervention, the p-value in the factor is 0.00.

This increase in average value continues to occur until the fourth measurement, it is after the third intervention. Interventions that given to the three groups are equally effective in increasing the average of the knowledge and assertive attitudes of the three groups. It can be seen from the p-value on the group factor * shows the value of 0.003.

Table 2: The statistical test results on the increase in average knowledge and Assertiveness in the three intervention groups, where the initial average score (before intervention) as a comparison (simple contrast

Tests of Within-Subjects Contrasts								
Source	**Measure**	**factor1**	**Type III Sum of Squares**	**df**	**Mean Square**	**F**	**Sig.**	**Partial Eta Squared**
factor1	Knowledge	Level 1 vs. Level 4	14373.352	1	14373.352	3793.639	.000	.815
		Level 2 vs. Level 4	10113.352	1	10113.352	2829.496	.000	.767
		Level 3 vs. Level 4	5007.407	1	5007.407	3578.010	.000	.806
	Assertiveness	Level 1 vs. Level 4	9794.307	1	9794.307	5383.954	.000	.862
		Level 2 vs. Level 4	5571.338	1	5571.338	2552.374	.000	.748
		Level 3 vs. Level 4	2210.560	1	2210.560	830.404	.000	.491
factor1 * KLP	Knowledge	Level 1 vs. Level 4	4.488	2	2.244	.592	.553	.001
		Level 2 vs. Level 4	1.211	2	.605	.169	.844	.000
		Level 3 vs. Level 4	3.627	2	1.814	1.296	.274	.003
	Assertiveness	Level 1 vs. Level 4	10.391	2	5.196	2.856	.058	.007
		Level 2 vs. Level 4	31.266	2	15.633	7.162	.001	.016
		Level 3 vs. Level 4	7.433	2	3.716	1.396	.248	.003
Error(factor1)	Knowledge	Level 1 vs. Level 4	3262.160	861	3.789			
		Level 2 vs. Level 4	3077.437	861	3.574			
		Level 3 vs. Level 4	1204.965	861	1.399			
	Assertiveness	Level 1 vs. Level 4	1566.302	861	1.819			
		Level 2 vs. Level 4	1879.396	861	2.183			
		Level 3 vs. Level 4	2292.007	861	2.662			

Table 2 shows that the average increase of knowledge and assertive attitudes of respondents occurred in the three intervention groups. The increase of the average value of knowledge and attitude has begun to occur in the second measurement, that is after getting the first intervention, this condition is proved by the value of p = 0.00, both knowledge and assertive attitude.

Table 3: The statistical test results on the increase in the average value of knowledge and assertiveness groups by group comparison.

Tests of Between-Subjects Effects							
Transformed Variable: Average							
Source	**Measure**	**Type III Sum of Squares**	**df**	**Mean Square**	**F**	**Sig.**	**Partial Eta Squared**
Intercept	Knowledge	41278.685	1	41278.685	59511.160	.000	.986
	Assertiveness	42486.634	1	42486.634	43528.389	.000	.981
KLP	Knowledge	8.725	2	4.362	6.289	.002	.014
	Assertiveness	.660	2	.330	.338	.713	.001
Error	Knowledge	597.215	861	.694			
	Assertiveness	840.394	861	.976			

Table 3, is the test results of differences between groups, it shows that there is no difference of the average increase in knowledge value and assertive attitude between the three groups, with p = 0.014 for knowledge and p = 0.001 for assertive attitudes. it means the interventions given with module from the "Neherta" model to the three groups effectively increase the average of knowledge and assertive attitudes of the respondents to all the intervention groups.

The increasing of the average value in knowledge and the assertive attitude of the three groups can be seen in Figure 1 and Figure 2.

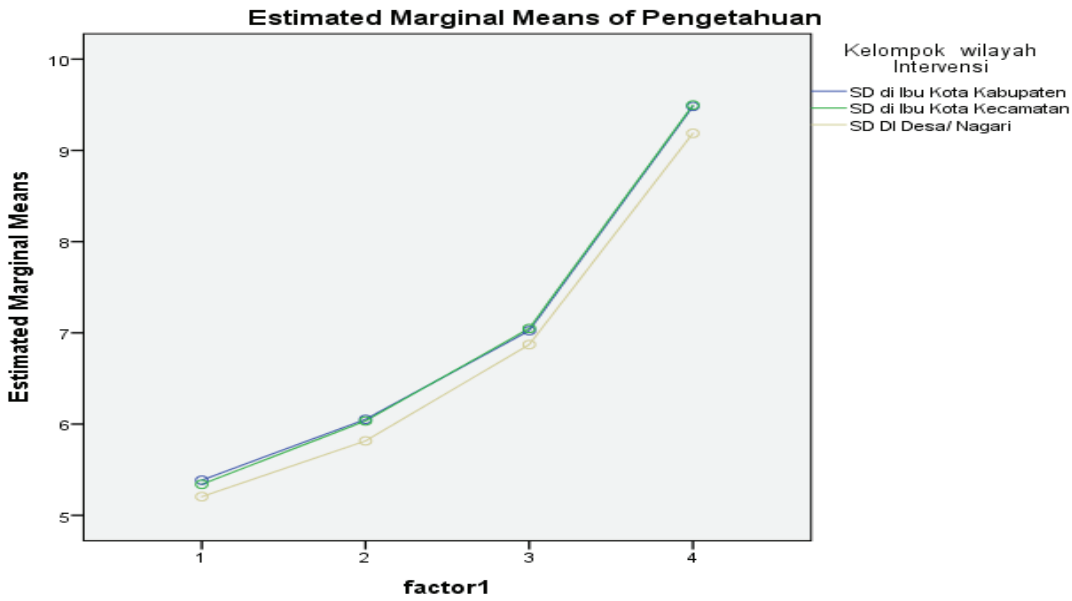

Figure 1: Graph of the average increase in knowledge value of respondents, after get 3 times intervention according to 4 times the measurement

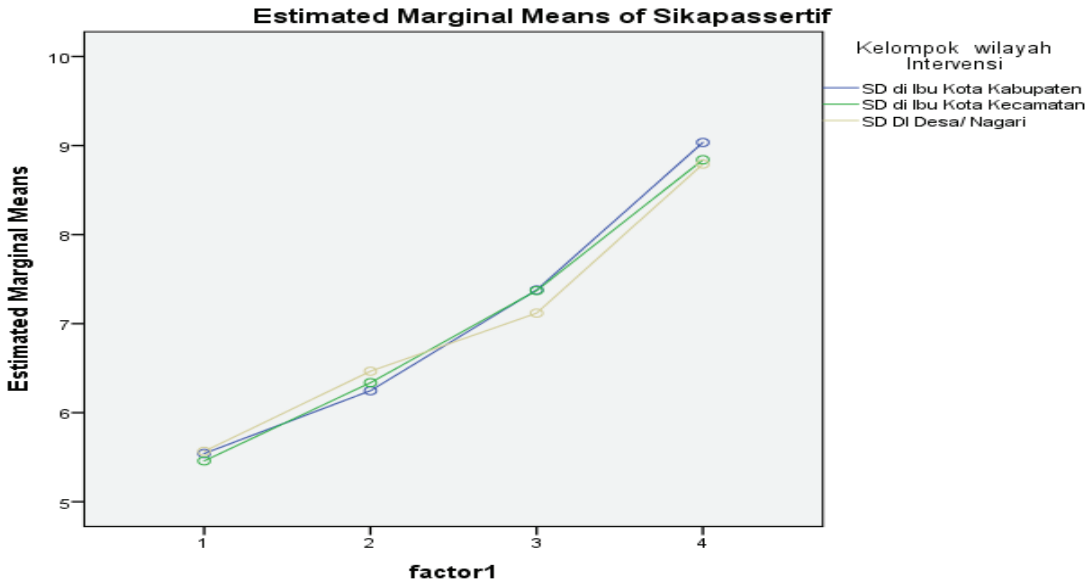

Figure2; Graph of average increase in value n assertive attitude of respondents, after get 3 times intervention according to 4 times the measurement

From Figure 1 and figure 2 it is clear that the average increase in the value of knowledge and assertive attitudes of the three intervention groups.

DISCUSSION

Sexual abuse against school-aged children is increasing from year to year in various countries around the world [3-6]. This sexual abuse harms the child, both physically, financially, and psychologically. The physical effects on children due to sexual abuse include Vaginitis, urinary tract infections, reproductive system infection [7]. While the psychological impacts are depression, social disturbance, psychiatric disorders [5] the financial impact is the increase in expenditure on treatment of victims [8] .Violence against children is not only harmful to children but also harm their family and country.

It will disadvantage the family, the children's victim of sexual abuse will spend a lot of time and amount of money to treat children's physical and psychological [9-12] beside that it will impact the country by the increasing amount of state expenditures for the treatment of children's victim of sexual abuse. This has been proven by research [13].

Sexual abuse against children is one of the public health issues that require its resolution, as it will have a devastating impact on society [12, 14, 15]. Therefore it should be immediately done apparent result to avoid child from sexual abuse. One of the efforts that have been done is to provide the health education to children [3, 16].

The "Neherta" model is one of the intervention models for elementary school age children from research dissertation study and has been tested on 180 students. "Neherta" model intervention has also been carried out through research involving two different professions, nurses, and teachers. from the trials and studies by two different professions are known that the intervention of the "Neherta" model increased the knowledge and assertive attitudes of primary school-aged children.

The "Neherta" model intervention is one of the model using various teaching media (presentation, video, discussion using pictorial story sketch, role play, leaflet and sexual abuse prevention song by using Minangkabau, West Sumatra local language) and is set based on school-age characteristics who love to learn while playing. this Neherta model applied only in Padang the capital city of West Sumatra, to see the effectiveness of Neherta model to school-age children either in the city nor in Nagari/village, it is necessary to do another research involve the respondents from the district/city, subdistrict, and Nagari.

The result of the research has been found that Intervention model "Neherta" is effective to improve the knowledge and attitude of school-age children in all groups of respondents (table 3). The results also proved by the results of multivariate test in Table 4 ($p = 0.003$) on

the statistical test results there is an increase of average knowledge and assertive attitude in the three intervention groups, where the initial average value (before the intervention) as a comparison (simple contrast) known that the average increase of knowledge and attitudes of assertive respondents has occurred starting from the first week (table 5) with the p = 0.00 after receiving the first intervention the average value of knowledge and assertive attitude of respondents has started to rise. The increase in the average value of knowledge and assertive attitude on the three groups of respondents always increases in every measurement (table 6) p = 0.00. It can be seen clearly in Figure 1 and Figure 2.

CONCLUSION

Modules of the "Neherta Model" proved to be effective and efficient to improve the knowledge and elementary school students' attitudes of assertive in West Sumatra.

Conflict of Interest: No conflict of interest arose in this study

Source of Finding: This study was conducted using a source of funds derived from the researcher himself

Ethical Clearance: This study has passed of the medical reseach ethics of the Dr. M. Djamil Hospital Padang Indonesian.

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DOI Numher: 10.5958/0976-5506.2018.01386.4

Impact of Strategic Information System on Quality of Public Healthcare Services

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ABSTRACT

The aim of this article is to study the impact of strategic information system on quality of public healthcare services in Iraq. After a brief literature review, an empirical study was conducted among 206 physicians of Baghdad hospitals. To this end, a model has been developed to be tested by structural equation modeling. The results of this study showed that strategic information system directly affected the quality of public healthcare services.

Keywords*: Strategic Information System , Information Quality ,E-service, Healthcare Services.*

INTRODUCTION

Before the era of wars in the country and the subsequent sanction against it, Iraq had a very high standard of healthcare when compared to other countries in the Arab region [1]. The deterioration in the country's health sector did begin during the Iran-Iraq war and continued to decline even further when the country received numerous economic sanctions [2] . As at the early 21 century, the country's healthcare sector, including supplies of medical equipment, the health infrastructure and healthcare personnel had been greatly compromised as a result of both the sanction and the war [3]. The country has been struggling since then to provide the essential primary health care services. Besides, healthcare in the country continues to be centralized and therefore not well restored [4].

Accordingly, it needs more effected factors that lead to improve quality of public healthcare services. Therefore, it has emerged as a competitive alternative, requiring effective strategic tools like strategic information system (SIS), which has three primary dimensions which include quality of the data as given by the patient and collected by the practitioner, the quality of e-service provided and the quality of the system [5]. Quality of the information refers to the comprehensiveness, timeliness and accuracy of the information given and collected [6]. Quality of information is central in healthcare as it provides the bases for decision making, planning and service provision, which all affect the quality of service. E-Service quality on the hand refers to the degree with which patients' expectations are met. It is the difference between the customer's expectations and perceptions about the service provided [7]. Lastly, a quality SIS can be said to that which assures security, privacy and ensures that all processes of data handling are efficient and cheap [8].Combination of these characteristics makes the customer at ease to provide complete information necessary for their service satisfaction. In this context, several scholars have studied the relation between SIS and QPHS. SIS allows acquisition, analysis, and protection of both traditional and digital forms of medical data that is important for the provision of quality of healthcare service [9]. After contentment that quality of SIS is vital for quality of healthcare [10], Furthermore it is essential for healthcare because allows for evidence-based decision making [11].

The current paper will explore the issue using evidence from Iraq. The purpose of the paper is to add literature into the ongoing debate whereby healthcare enthusiasts still disagree to agree that strategic information system impacts the quality of health care service. The paper standpoint is that the strategic information system significantly affects the quality of public healthcare services.

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MATERIAL AND METHOD

Research Model

The theoretical model of this study consists of strategic information system (SIS) as independent variable with three dimensions 1) information quality (InfQ) ;2) e-service quality (EsQ) and 3) system quality (SyQ) ,and quality of public healthcare services (QPHS) as dependent variable . According to the above discussion the following hypotheses are setup:

Hypotheses 1 : Strategic information system has a significant Impact on quality of public healthcare services.

Hypotheses 1a: Information quality has a significant Impact on quality of public healthcare services.

Hypotheses 2a: E-service quality has a significant Impact on quality of public healthcare services.

Hypotheses 3a: System quality has a significant Impact on quality of public healthcare services.

Sample

The quantitative research was done targeted Iraqi physicians in Baghdad hospitals. A questionnaire with 22 items is used as a tool , 300 Iraqi physicians were randomly selected to participate in the study , among them 229 (76.3%) responded and answered the questionnaire, however, 23 questionnaires were uncompleted and the final analyzed questionnaires were 206.

FINDINGS

A questionnaire were applied in order to gather the data .Before applying to fill the questionnaire a pilot study was conducted , and this pilot study was formed and sent to eleven experts (both physicians and university professors) from different hospitals and universities for evaluation.

The reliability analysis for both SIS and QPHS scale was conducted using Cronbach alpha coefficient [12] using SPSS V.23 , it recorded a quit good values (>0.70) and the output is shown in Table 1.

Table 1. Reliability Outputs of items in strategic information system and quality of public healthcare services

Variable	Value recorded	Evaluation
SIS	0.732	Quite Good
InfQ	0.748	Quite Good
EsQ	0.712	Quite Good
SyQ	0.708	Quite Good
QPHS	0.834	Quite Good

The hypotheses developed in this study were tested using structural modeling (SEM). Encourages the more confirmatory and less exploratory modeling [13]; therefore, it is suitable for theoretical testing rather than theoretical development [14]. It usually starts with a hypothesis, represents it as a model with a measuring instrument, and tests the model.

Additionally both SPSS v.23 and Amos v.18 was applied which enabled to figure out cross-relations between constructs and explore a draft model into a fitting one. In order to test the validity, a draft model derived from a previous corrected path analysis was applied in Amos. After revising the model several times (Modification Indices)[15], an accepted model is achieved which shows a perfect fit in terms of all required goodness of fit tests of structural equation modeling.

Table 2 shows strategic information system model , it has a Chi-square value of 241.123 and degrees of freedom = 50, with ratio (4.822). It was failed to reject to model. This statistic supports that the differences of the predicted and actual matrices are non-significant, indicative of acceptable fit. The goodness of fit (GFI) has a value of 0.903 which is acceptable, and adjusted goodness of fit (AGFI) has a value of 0.892 which is close to the acceptance value acceptable. The root mean square error (RMSEA) indicates 0.077, is good as it is below 0.08. Table 2 shows quality of public healthcare services model, it has a Chi-square value of 15.652 and degrees of freedom = 11, with ratio (1.423). It was failed to reject to model. This statistic supports that the differences of the predicted and actual matrices are non-significant, indicative of acceptable fit. The goodness of fit (GFI) has a value of 0.979 which is acceptable, and adjusted goodness of fit (AGFI) has a value of 0.946 which is also acceptable. The root mean square error (RMSEA) indicates 0.046, is very good as it is below 0.05.

Table 2. Goodness of fit result and conditions

Goodness of fit indices		Results	Cut Off Value	Description
SIS	Chi-Square	241.123	small is good	Approximately Good
	Ratio	4.822	< 5	Good
	GFI	0.903	> 0.90	Good
	AGFI	0.892	> 0.90	Approximately Good
	RMSEA	0.077	< 0.08	Good
QPHS	Chi-Square	15.652	small is good	Good
	Ratio	1.423	< 5	Good
	GFI	0.979	> 0.90	Good
	AGFI	0.946	> 0.90	Good
	RMSEA	0.046	< 0.08	Good

(Overall) Model

The model is conceptualized to understand the relationship between SIS and QPHS. The result in Table 3 refer to the regression weight . it shows that system quality (SyQ) dimension was highest for strategic information system (SIS) towards quality of public healthcare services (QPHS) which is recorded 0.83 weight estimate value, the regression weight for information quality (InfQ) dimension was highest for (SIS) towards QPHS which is recorded 0.74 weight estimate value, whereas the regression weight for e-service quality (EsQ) was lowest for measuring (SIS) in such units which is recorded 0.18 weight estimate value. The standardized regression weight for the path linking exogenous latent variable SIS to endogenous latent variable QPHS was 0.67 which was found to be significant at a significance level of 0.05. Therefore, the alternative main hypothesis H1 of strategic information system positively impacting the quality of public healthcare services is supported.

Table 3. Regression Weights for Overall Model

Path	Standardized Regression Weight Estimate	P
SIS to QPHS	0.67	0.002
SIS to InfQ	0.74	0.000
SIS to EsQ	0.18	0.041
SIS to SyQ	0.83	0.000

(Factor) Model

The model is conceptualized to understand the relationship between SIS and QPHS. According to the result shown in Table 4 the standardized regression weight for the path linking InfQ to QPHS was 0.243 which was found to be significant at a significance level of 0.05. Therefore, the alternative hypothesis H1a of InfQ positively impacting the QPHS is supported. Also the standardized regression weight for the path linking SyQ to QPHS was 0.771 which was found to be significant at a significance level of 0.05. Therefore, the alternative hypothesis H3a of SyQ positively impacting the QPHS is supported. In addition the standardized regression weight for the path linking EsQ to QPHS was 0.037 which was found to be not significant at a significance level of 0.05. Therefore, the alternative hypothesis H2a of EsQ positively impacting the QPHS is un supported.

Table 4 Regression Weights for factor Model

Path			Estimate	S.E.	C.R.	P
QoH	<---	InfQ	0.243	0.126	1.932	0.043
QoH	<---	SeQ	0.037	0.049	0.766	0.444
QoH	<---	SyQ	0.771	0.117	6.610	***
q1	<---	InfQ	1.000	Regression Weight		
q3	<---	InfQ	0.518	0.240	2.154	0.031
q4	<---	InfQ	1.906	0.449	4.244	***
q7	<---	SeQ	0.951	0.094	10.104	***
q8	<---	SeQ	0.840	0.097	8.689	***
q9	<---	SeQ	0.842	0.105	8.025	***
q10	<---	SeQ	1.224	0.096	12.813	***
q11	<---	SyQ	1.000	Regression Weight		
q12	<---	SyQ	1.380	0.146	9.447	***
q13	<---	SyQ	1.116	0.149	7.476	***
q14	<---	SyQ	0.933	0.144	6.494	***
q15	<---	SyQ	1.018	0.108	9.423	***
q20	<---	QoH	0.704	0.103	6.829	***
q19	<---	QoH	0.612	0.099	6.170	***
q18	<---	QoH	0.649	0.088	7.353	***
q17	<---	QoH	0.546	0.100	5.463	***
q21	<---	QoH	0.799	0.108	7.374	***
q22	<---	QoH	1.022	0.120	8.497	***
q16	<---	QoH	1.000	Regression Weight		
q6	<---	SeQ	1.000	Regression Weight		

DISCUSSION AND CONCLUSIONS

Information systems are one of the structural changes that public institutions have adopted in recent times. One of the basic requirements of the information society is transparent and fast public administration. It is thought that such an administrative structure will be effective in service provision. Healthcare is one of the areas where the public sector allocates the most resources. In recent years, the public healthcare sector in Iraq has suffered from the conditions of the war on terror, which have affected the provision of logistical and financial capabilities. Quality of public healthcare services has become a national priority in almost all countries in the world. According to different health scholars SIS is one of the ways in which the quality of health care can be improved. An empirical study found a significant relationship between strategic information system and the quality of healthcare provided [16]. And improving the quality of information systems improves the patient satisfaction [17]. And the quality of SIS helps to monitor the performance of healthcare professionals, improves healthcare provided and provides a platform to base decisions [18].

Availability of strategic information and the quality of management of such information has perceived importance which affects both healthcare quality and the safety of the patient [19] . According to study conducted in the U.K by (Luchenski, et al)[20], majority of the patients and high number of members of the public in the U.K support the strategic information system; because of the perception that such technologies will improve the quality of strategic information system leading to improved quality of healthcare service.

The results of this study showed that the information quality have greatly affected the quality of public healthcare services, In this regard, literature stressed the importance of adopting information quality in high-risk industries such as healthcare [21], As they have an important role to play in providing quality care [22] . As such, the result demonstrated the effect of system quality on quality of public healthcare services.

In turn, the results did not demonstrate any impact of e-service quality on quality of public healthcare services , This finding is contrary to the study of (Hafeez & Malak)[23], The difference may be due to different field of study, As well as the fact that the healthcare sector in Iraq has not applied e-service so far.

In a summary, the results demonstrated there are impact for two key elements of strategic information system (information quality (InfQ), system quality (SyQ)) on improving quality of healthcare services.

Conflict of Interest : Author declared: None

Source of Funding: Self-funded

Ethical Clearance: The participants' data were collected in accordance with the Helsinki declaration, and each participant was informed about the nature and the main objective of the study.

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DOI Numher: 10.5958/0976-5506.2018.01387.6

The Analysis of Risk Factors Associated with Nutritional Status of Toddler in Posyandu of Beringin Village, Alalak Sub-District, Barito Kuala District

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ABSTRACT

Barito Kuala is one of the regencies in South Kalimantan with the highest prevalence of underweight with a percentage of 20.7%. In 2017, malnutrition occurred in Alalak District as many as 374 children under five (30.6%) with the highest nutritional status, namely in Beringin Village as many as 57 toddlers (16%). Research aim to explain the relationship between risk factors and nutritional status of childrenin the Posyandu of Beringin Village, Alalak Sub-District, Barito Kuala District. This study used an observational method with cross-sectional design. The sample was 98 respondents with proportional random sampling . Data were analyzed using chi square and Fisher exact test for bivariate, and logistic regression test for multivariate. The results showed that there was a relationship between maternal nutritional knowledge (p-value 0.043) and feeding practices (p-value 0.0001) with the nutritional status of children, while the gender factor (p-value 0.873), the age of the toddler (p-value 0.570), infectious disease (p-value 0.105), the last education of the mother (p-value 0.182), father's last education (p- value 0.290), family income (p-value 0.790), and number of children (p-value 1.000) showed is no relationship with nutritional status of children under five. Multivariate results showed that the most dominant feeding practice was related to p-value 0.001 and the PR value is 5.875 times the impact on nutritional status.

***Keywords**: Nutritional Status, Malnutrition, Risk Factors, Toddler.*

INTRODUCTION

Problem nutrition in infants remains a challenge that must be addressed seriously, among which malnutrition.[1] The global prevalence of undernutrition in 2014 was 2.4%.[2] In 2013, the prevalence of malnutrition in children under five increased to 19.6%.[3] South Kalimantan ranks 5th the highest malnutrition in Indonesia with a prevalence of 27.4%. Barito Kuala District is one of the contributors to the malnutrition (W/A<-2DS) highest.[4] A report from the Barito Kuala Health Office, the highest incidence of malnutrition in Alalak Sub-District was 30.6 %. The villages with the highest nutritional status in under five children are in the village of Beringin as much as 16%.

The causes of malnutrition in children under five are directly include inadequate intake of food as well as their accompanying infectious diseases. The indirect causes include family income, number of children, parenting, maternal education, and individual health services and environmental sanitation. The factors associated with under-five nutritional status are children's characteristics (including food intake, age, and sex), parenting style and family characteristics (including maternal knowledge about nutrition and feeding practices), as well as community characteristics, demographics and social.[6,7]

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MATERIALS AND METHOD

The research desing was quantitative research with cross sectional. The population is all children under five in the Posyandu area in Beringin Village, Alalak Sub-District, Barito Kuala District. While the sample of 98 respondents obtained from the calculation using the lemeshow proportion difference test formula. The sampling technique uses proportional random sampling. Data were analyzed using chi square and Fisher exact test for bivariate, and logistic regression test for multivariate with 95% significance level.

RESULTS AND DISCUSSION

Bivariate Analysis

Table 1. The Bivariate Analysis of Variables

No	Variable	Category	Nutritional Status		Total	P-Value
			Malnutrition	Normal		
1.	Gender	Male Female	16 (41.01%) 22 (37.3%)	23(59.0%) 37(62.7%)	39 (100%) 59 (100%)	0.873
2	Age	12-36 month 37-60 month	30 (41.1%) 8 (32.0%)	43 (58.9%) 17 (68.0%)	73 (100%) 25 (100%)	0.570
3.	Infectious disease	Chronic Acute	5 (71.4%) 33 (36.3%)	2 (28.6%) 58 (63.7%)	7 (100%) 91 (100%)	0.105
4.	Last education of mother	Low High	33 (42.9%) 5 (23.8%)	44 (57.1%) 16 (76.2%)	77 (100%) 21 (100%)	0.182
5.	Last education of father	Low High	26 (35.1%) 12 (50.0%)	48 (64.9%) 12 (50.0%)	74 (100%) 24 (100%)	0.290
6.	Mother's knowledge on nutrition	Lack Good	20 (52.6%) 18 (30.0%)	18 (47.4%) 42 (70.0%)	38 (100%) 60 (100%)	0.043*
7	Feeding practice	Lack Good	30 (57.7%) 8 (17.4%)	22 (42.3%) 38 (82.6%)	52 (100%) 46 (100%)	0.0001*
8.	Family income	Low High	32 (40.0%) 6 (33.3%)	48 (60.0%) 12 (66.7%)	80 (100%) 18 (100%)	0.790
9.	Number of children	Not Ideal Ideal	8 (38.1%) 30 (39.0%)	13 (61.9%) 47 (61.0%)	21 (100%) 77 (100%)	1.000

Based on table 1, the variables of gender with the nutritional status of children using the Chi-Square test obtained p-value of 0.873. This indicates no relationship between gender and nutritional status of children, it caused that between the sexes men and women at the age of five depend on feeding practice given by the mother. If the mother did good feeding practice, the nutritional status of children will be good and vice versa. So that the sex factor influences are controlled by the practice of feeding from mothers in determining the nutritional status of children. There was no significant relationship between gender and nutritional status of children (*p-value*=1.557). Although the nutritional status is influenced by biological determinants which include sex, but it is not significant if the presence of other factors such as prakti k controlling feeding in influencing the nutritional status of children.[7, 8]

Analysis of age variables with nutritional status of children using Chi-Square test obtained p-value of 0.570 which means there is no relationship between age and nutritional status of children. This occurs because other factors such as feeding practice. Children aged 37-60 months can convey their wishes to parents about what foods they want to consume so that the practice of feeding parents determines the nutritional status of children. Likewise with a group of children aged 12-36 months, the role of maternal nutrition knowledge is needed in feeding the toddlers. Children under five with ages 12-36 months are passive groups so that the role of parents is needed in fulfilling the nutritional status of children under five. There is no relationship between age and nutritional status of children under five p-value>0.05 (sig 0.068).[9, 10]

Analysis of infectious disease variables with nutritional status of children using the Fisher's Exact Test obtained p-value of 0.105. This means there is no relationship between infectious diseases and nutritional status of children. Because only found toddlers with the most infectious diseases are acute types of diseases, such as acute respirate infection (ARI) and diarrhea. This type of acute disease does not last long (not chronic) . In addition, if children under five are given good feeding practices, infectious diseases tend not to affect the nutritional status of children under five. The effects of infectious diseases on nutritional status in children vary, depending on the consumption patterns from parents, the kind of food that is able to consume the child and treatment efforts when the period of the disease. In line with There was no significant relationship between chronic infectious diseases and nutritional status in children under five, with a p-value of 0.289 (p>0.05).[11, 12]

Analysis of the variables of the last education level of mothers with nutritional status of children using the Chi-Square test obtained p-value of 0.182 . This means that there is no relationship between the last level of education of the mother and the nutritional status of Bali , because mothers with the last low education level still have the same opportunity like the last educated mother to access information about her nutritional status through counseling activities at the Posyandu. This proved that mothers with low education found some who had good knowledge and pre- feeding skills to keep the nutritional status of children well. A high education does not necessarily guarantee good behavior related to maternal health and nutritional status of children. Mothers who have high or low education have an opportunity to get good information and knowledge to support their health behavior and nutritional status. Between education and nutritional status obtained p-value of 0.471 which means that there is no relationship between maternal education and nutritional status of children under five.[13,14]

Variable analysis of the father's last education level with nutritional status of children using the Chi Square test p-value obtained 0.290. This means there is no relationship between the level of education of the father and the nutritional status of children under five. The fact shows that the role of fathers is more work than related to the nutritional continuity of toddlers. Although the level of education of fathers determines the family income generated, not all families with fathers with low education have children with low nutritional status. The nutritional status of toddlers is determined more by mothers who have direct contact with toddlers in providingfeeding practices according to their nutritional needs . The results of the study showed that father's education was found to be the most with the basic category, namely 62 people (73.8%).[15]

Variable analysis of maternal nutrition knowledge with nutritional status of children using the Chi-Square test obtained p-value of 0.043. This means that there is a relationship between maternal nutritional knowledge and nutritional status of children. The facts show that knowledge underlies mothers to behave in providing food to their children. Mothers who have good knowledge about nutritional status, tend to be

more selective in feeding toddlers so that the nutritional status of children is well maintained. On the contrary, mothers who have less knowledge tend not to pay attention to how the practice of feeding on toddlers in accordance with nutritional requirements so that children are vulnerable to experiencing nutritional problems such as malnutrition. Knowledge about nutrition is needed to overcome problems arising from nutritional consumption. Mother as the person responsible responsible for food consumption for families, mothers must have knowledge about nutrition through both formal and informal education. The results of Pearson chi-square statistical test showed that there was a relationship between maternal knowledge about child nutrition and nutritional status of children under five years of age in the working area of Rejosari Community Health Center in Sail Village, Tenayan Raya City, Pekanbaru (p value of 0.004<α 0.05).[7, 16]

Analysis of the variables of feeding practices with nutritional status of children using Chi-Square test obtained p-value of 0.0001. This means that there is a relationship between the practice of feeding and the nutritional status of children in the Posyandu of Beringin Village, Alalak Sub-District, Barito Kuala District. Because, there is feeding practice given by mothers determining the nutritional status of children. Mother giving good feeding practices have a chance to have a child with a normal nutritional status than mothers who are not good in feeding. Food consumed by children under five depends on the feeding practices carried out by people old, especially mother. [8, 17]

Analysis of family income variables with nutritional status of children under five using the Chi-Square test obtained p-value of 0.790. This means that there is no relationship between family income and nutritional status of children. The fact showsthat family income in the study area has more temporary employment and has income below the Barito Kuala District Minimum Wage, which is <2,454,671. However, this is not a factor related to the nutritional status of children. There is no relationship between the economic level and nutritional status in the Air Tawar Barat Urban Village in Padang with p-value of 0.868.[18]

Variable analysis of the number of children with nutritional status of children under five using the Chi Square test obtained p-value of 1.000. This means there is no relationship between the number of children with nutritional status of children under five. Facts show that there is a person's ability old meets food needs along with the increasing number of children in the family. Families who have a number of children are not ideal, on average from families who have high income so that they are able to meet the nutritional adequacy of their family members . Poor families will more easily meet their food needs if their family members are small. There was no significant relationship between the number of children in the family and the nutritional status of children.[19, 20]

Multivariate Analysis

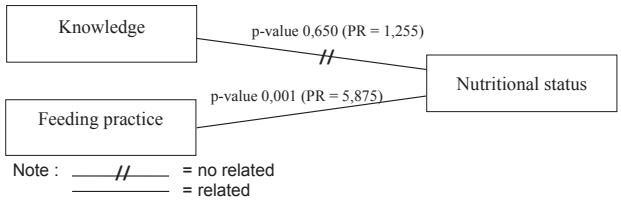

Figure 1. The Multivariate Analysis of Variables

Based on Figure 1 , it is known that the practice of feeding with a p-value of 0.001 and the prevalence ratio (PR) value is the highest, namely 5.875 times the effect on the nutritional status of children . This means prakti k feeding is the most dominant risk factors associated with the nutritional status of children in Posyandu Beringin, Alalak Sub-District, Barito Kuala District.

Maternal nutritional knowledge on multivariate analysis showed a non-significant relationship with nutritional status of children although the bivariate analysis showed a significant relationship. This is due to the influence of other variables that are stronger, considering the influential variables are analyzed all at once so that the possibility of being controlled by variables has a greater influence on the practice of feeding.

Despite the knowledge of good maternal nutrition but do not carry out daily feeding practice good for babies it will lead to nutritional problems such as lack of nutrition. Conversely, if the knowledge of maternal nutrition is under-fives, the practice of feeding the toddlers is used done well in the family will support a good nutritional status. This is because behavioral sharing in enabling good feeding is not only based on good nutrition knowledge but other factors as support such as habits applied in the family.21

CONCLUSION

Based on the research that has been done at the Posyandu of Beringin Village, Alalak Sub-District, Barito Kuala District, it can be concluded that there is a relationship between maternal nutritional knowledge (p-value 0.043) and feeding practices (p-value 0.0001) with nutritional status of children, while gender factors (p-value 0.873), toddler age (p-value 0.570), infectious disease (p-value 0.105), mother's last education (p-value 0.182), father's last education (p-value 0.290), family income (p-value 0.790) and the number of children (p-value 1.000) showed no correlation with the nutritional status of children, and the most dominant factor of feeding practice was related (p-value 0.001) and the PR value was 5.875 times the effect on the nutritional status of children.

Ethical Clearance: This study approved and received ethical clearance from the Committee of Public Health Research Ethics of Medical Faculty, Lambung Mangkurat University, Indonesia. In this study, we followed the guidelines from the Committee of Public Health Research Ethics of Medical Faculty, Lambung Mangkurat University, Indonesia for ethical clearance and informed consent. The informed consent included the research tittle, purpose, participants' right, confidentiality, and signature.

Source Funding: This study was done by self-funding from the authors.

Conflict of Interest: The authors declare that they have no conflict interests.

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DOI Numher: 10.5958/0976-5506.2018.01388.8

The Findings of Escherichia Coli in Drinking Water with Reverse Transcriptase Polymerase Chain Reaction Method at 16S RNA Gene

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ABSTRACT

Drinking water is the fundamental needs of urban communities. Emerging drinking water refilled station (DWRS) causing decreased in water quality so required the existence of quality monitoring efforts. RT-PCR technique could detect the presence of Escherichia coli in drinking water. The RT-PCR method is superior in accuracy, efficiency, and specificity. This research aims to analyze the presence of Escherichia coli as an indicator of the quality of refilled drinking water with the technique of RT-PCR target 16s RNA. The sample in this study was ten drinking water refilled station with the total sample 30 samples measured in the inlet, outlet and output. The results of RT-PCR in Mariso district, obtained RNA Band in the gene 16S RNA at position 723-bp in the sample a. 13. While in Panakukkang district captured RNA Band in the gene 16S RNA at position 723-bp on sample B. 11; B. 12; B. 13. Conclusions, Genomic RNA template by RT-PCR can be used to detect bacteria Escherichia coli in drinking water more quickly and accurately than conventional methods.

Keywords: *Escherichia Coli, 16S-RNA, drinking water, RT-PCR, Culture*

INTRODUCTION

Infection from drinking water caused 13 million people died annually, 2 million of them are infants and children. Consume water contaminated by pathogenic microorganisms may cause various gastrointestinal diseases.[1] Increasing for drinking water needs make growing drinking water refilled station (DWRS).[2]

Contamination in drinking water produced by a variety of physical hazards, chemical, biological, radioactive, equipment, poor sanitation, and hygiene.[3,4] Increased quality of water, waste disposal, and personal hygiene are essential to reduce contamination.[1] The number of drinking water refilled station in South Sulawesi province in 2015 were 1.017, qualified 591 and 426 unqualified. [5]

There are 28,908 diarrhea cases in Makassar city in 2013, *Incidence Rate* 21.3 ‰. One of the causes of diarrheal diseases were drinking water contaminated with bacteria.[5]

Coli's most probable number (MPN) is considered to be less accurate in detecting certain types of bacteria in the water. [6] RT-PCR techniques can be used to identify life bacteria. [7] RT-PCR have more accuracy, efficiency, and specificity.[8,9] Kandou et al., found 8.33% samples of bottled drinking water and 25% of drinking water samples polluted by *Escherichia coli* serotype O157: H7. The source of the contamination comes from unstandardized processing. [10]

RT-PCR can detect bacteria in different concentrations. Primary EF II applications decreased false-positive results compared to 16S primary rRNAs. The hydrophobic FHLP filter has a higher ability to absorb bacteria compared to HAWB hydrophilic filters. Hence the use of hydrophobic filters will increase the sensitivity of RT-PCR. [11,12] This research aims to analyze the presence of bacterial pathogens Escherichia coli as an indicator of the quality of drinking water refill with

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the technique of Reverse Transcriptase - PCR (RT-PCR) and target 16s RNA.

MATERIALS AND METHOD

This is an observational study to identify the presence of *Escherichia coli* as an indicator of the quality of refilled drinking water with RT-PCR 16SRNA target. Samples obtained from 5 drinking water refill station in Mariso and Panakukang district in Makassar city. Each example obtained from the inlet, outlet and drinking water at the level of the consumer (outputs), a total of 30 samples.

DNA Extraction

100 ml sample was added 900 ml solution of L6 (Lysis buffer) then incubated for 24 hours, put on a shaker for 2 hours then added 20 µ l suspension. This mix of vortices and placed on a shaker 10 rpm for 10 minutes. Vortex and centrifuge at 12,000 rpm for 15 minutes scoop out the supernatant. Reserving ten µl of supernatant fluid in the tube. Washed twice with 1 ml solution of L1 (Washing buffer), centrifuge and vortex for 15 seconds then discard the supernatant. Wash two times with 1 ml of 70% ethanol and once with acetone. Discard supernatant acetone, let the tube open and incubate at a temperature of 56 ^{0}C in the incubator for 10 minutes. Add 60 µl of TE-elution buffer, vortex well then the tube incubation at a temperature of 56^{0}C for 10 minutes. After that, the centrifuge for 30 seconds at 12,000 rpm. Move 50 µ l of supernatant into a new vial then keep at a temperature of 200C until ready to be processed by PCR technique.[13]

Amplification of DNA by PCR

Mixture PCR samples in PCR tubes. Every 16.9 µ l of sterile water, 2 µ l 10 mm *deoxynucleotide* triphosphate mixture 1 µ l 50 mM Mgso4, 2.5 µ L of 10 X amplification buffer 0.5 µ l 10 µ M Forward primer and 0.5 µ l 10 µ M reverse primer, 0.1 µ l (0.25 µ U/L) of Taq DNA polymerase and sterile water is added until the final volume was 22.5 µ l. The prepared vial that has filled each of the 2.5 µ l sample DNA. Each tube in a reaction mixture PCR content as much as 22.5 µ l. after that the tubes are filled by using PCR machines (hybrid, Ashford, UK) as many as 40 cycles each cycle consisted of denaturation at 94^{0}C for 1 min, annealing temperature 57^{0}C for 1 minute 15 seconds and the extension at a temperature of 72^{0}C for 30 seconds. The final extension at 72^{0}C for one night.[14]

Detection of PCR products

Each five µ l amplification products mixed with two µ l solution. Put in 1.5% agarose gel wells that are submerged in a tank containing a buffer Tris-EDTA acetic acid. Also included a marker (DNA ƛ/Hind III) into the wells of agarose to know the size of the PCR product, then DNA electrophoresis runs for 1 hour with the constant voltage temperatures 75 volts. After 1 hour, electrophoresis stopped and gels lifted and observed under ultraviolet light (UV). The results obtained in the form of a black ribbon pattern DNA (DNA bands) which shows the number and different patterns.

Data Analysis

Results of detection of PCR with electrophoresis are analyzed based on whether or not there are pieces in DNA that are formed and data presented in a descriptive by using tables and images. Sequence and position of the Nucleotide Primer. 16SRNA Gene; Forward 5 ‘ CGA GCG GAC GTC GGG TGA GT3 ‘ (From 81) Reverse 5 ‘ ACA TCG TCG ACG GCG TTT TGG A3 ‘ (From 786). Size (bp) 723 Access number EF6209.

RESULTS

Analysis of a physical parameter DWRS In Mariso Makassar City including the temperature and TDS showed in table 1. Analysis of the Chemical parameters includes pH, iron, and chloride. Results on pH samples; A.11 (8.18), A.21 (8.01), A.31 7.09, A.41 (7.46), A.51 (7.7). Iron found in the samples; A.11 and A.51 about 0.1 mg/l. The highest chloride found in the sample A.51 100mg/l, while the lowest was on samples; A. 22, A. 23; A. 31; A. 32; A. 33 at 6 mg/l. Cultures found almost all of the samples examined were positive MPN coli.

Table 1. Physical and chemical parameters DWRS In Mariso Makassar City

Code station	Sample Code	Source	The temperature ^{0}C	TDS (mg/l)	PH	Iron (mg/l)	Chloride (mg/l)	Culture MPNcoli
1	A. 1.1	Inlet	27.5	107.8	8.18	0.1	37	+
	A. 1.2	Outlet	27.8	102.3	8.22	0	10	+
	A. 1.3	Output	31.5	117.8	7.11	0	10	+
2	A. 2.1	Inlet	27.9	99.6	8.01	0	8	+
	A. 2.2	Outlet	27.5	96.8	8.18	0	6	+
	A. 2.3	Output	29.5	107.5	7.19	0	6	+
3	A. 3.1	Inlet	27.0	27.0	7.09	0	6	+
	A. 3.2	Outlet	27.5	111.2	8.18	0	6	+
	A. 3.3	Output	27.5	87.5	8.18	0	6	+
4	A. 4.1	Inlet	29.2	29.2	7.46	0	12	+
	A. 4.2	Outlet	28.6	38.4	7.64	0	10	+
	A. 4.3	Output	30.2	107.5	7.5	0	10	+
5	A. 5.1	Inlet	28.4	28.4	7.7	0.1	100	+
	A. 5.2	Outlet	32.2	45.5	7.11	0	95	+
	A.5.3	Output	29.2	260	7,77	0	95	+

Examination of a physical parameter in Panakukang Makassar City the temperature of the inlet, outlet and output of each sample shown in table 2. Analysis of the Chemical parameters includes pH, iron, and chloride. The results of the investigation of the PH at sample b. 1.1 (7.1), b. 2.1 (8.9), b. 3.1 (7.4), b. 4.1 (7.8), b. 5.1 (8). Iron and chloride were not found. Examination of Coli MPN method using culture retrieved sample code B. 1.1, B.1.2 and B. 1.3 as well as sample B. 5.1; B. 5.2 and B.5.3 negative MPN coli.

Tabel 2. Analysis of physical and chemical Parameters DWRS Station In Panakukang

Code station	Sample Code	Source	The temperature of the ^{0}C	TDS (mg/l)	Ph	Iron (mg/l)	Chloride (mg/l)	Coli MPN Culture
1	B. 1.1	Inlet	30,8	55,7	7,1	0	0	-
	B. 1.2	Outlet	30	30	7.7	0	0	-
	B. 1.3	Output	31	31	8.5	0	0	-
2	B. 2.1	Inlet	30,1	53,7	8.9	0	0	+
	B. 2.2	Outlet	29	29	9	0	0	+
	B. 2.3	Output	30,4	28.4	9	0	0	+
3	B. 3.1	Inlet	29,6	75,4	7,4	0	0	+
	B. 3.2	Outlet	29,4	29,4	7,6	0	0	+
	B. 3.3	Output	31,2	28,2	7,4	0	0	+
4	B. 4.1	Inlet	29,8	37,14	7,8	0	0	+
	B. 4.2	Outlet	27.5	27.5	7,8	0	0	+
	B. 4.3	Output	31,2	25,2	7.5	0	0	+
5	B. 5.1	Inlet	30,1	30,8	8	0	0	-
	B. 5.2	Outlet	29.2	29.2	8,5	0	0	-
	B. 5.3	Output	28	24	8,5	0	0	-

Analysis RT-PCR in the gene 16S RNA found in the samples a. 13 (positive Escherichia Coli) while the other samples undetected, as shown in table 3.

Table 3. Results of RT-PCR *Escherichia coli* 16S RNA-gene on DWRS in district Mariso

Slot	Sample Code	RT-PCR Results	NOTE
1	Marker	-	
2	A. 1.1	(-)	
3	A. 1.2	(-)	
4	A. 1.3	(+)	Detected
5	A. 2.1	(-)	
6	A. 2.2	(-)	
7	A. 2.3	(-)	
8	A. 3.1	(-)	
9	A. 3.2	(-)	
10	A. 3.3	(-)	
11	A. 4.1	(-)	
12	A. 4.2	(-)	
13	A. 4.3	(-)	
14	A. 5.1	(-)	
15	A. 5.2	(-)	
16	A.5.3	(-)	
17	Negative Control	(-)	

Analysis RT-PCR in the gene 16S RNA found in the samples B. 21, B. 22 and B. 33 (Positive *Escherichia Coli*) while the other samples undetected, as shown in table 4.

Table 4. Results of RT-PCR *Escherichia coli* 16S RNA-gene on DWRS in district Panakukakng

Slot	Sample Code	RT-PCR Results	NOTE
1	Marker	-	
2	B. 1.1	(-)	
3	B. 1.2	(-)	
4	B. 1.3	(-)	
5	B. 2.1	(+)	Detected
6	B. 2.2	(+)	Detected
7	B. 2.3	(+)	Detected
8	B. 3.1	(-)	
9	B. 3.2	(-)	
10	B. 3.3	(-)	
11	B. 4.1	(-)	
12	B. 4.2	(-)	
13	B. 4.3	(-)	
14	B. 5.1	(-)	
15	B. 5.2	(-)	
16	B. 5.3	(-)	
17	Positive Control	(-)	

Electrophoresis in Mariso district obtained RNA Band in the gene 16S RNA at position 723-bp in the sample A. 13. While in Panakukakng obtained on sample B. 11; B. 12; B. 13.

DISCUSSION

Escherichia coli contamination in drinking water is caused by the unstandardized process. Chlorine can kill Escherichia Coli by destructive process of transport and respiration of membrane cells. The Escherichia Coli serotype O157: H7 strain G can still survive on the low chlorine concentrations. [15]

The prolonged contact with the raw water the higher the chance microbes overgrowth. The contact time between water with UV light for at least four seconds, and the time of connection between the water and the ozone at least four minutes. The Faster water flows rate than the specified time, the effectiveness of UV as harmful bacteria exterminator will decrease. [16]

Observation using *electron microscopy scanning* indicated that *Escherichia coli* serotype O157: H7 sticking and multiply on the walls of the container and survive for more than 300 days. Poor hygiene of the bottles can make the formation of biofilms.[17] The sequence selected as targets for amplification, resulting in 234 bp and bp PCR product 115.[12] biofilm cells more durable against anti-microbial materials, the physical condition of such extreme heat, so the contamination by these cells can spread the disease through food and water. [10]

The hygiene dispenser is generally less noticed by the consumer. The method of a repeating dispenser reset without cleaning the inside of the container allowing the growth of microbes. The risk of microbial contamination can occur either in normal-temperature, cold or heat because germs can grow at the cold, regular or hot temperatures.[18] The impact of the microbial contamination in the dispenser can potentially cause diarrhea. Contamination of drinking water can occur at the level of the producers, sellers or consumers. Drinkable water should be qualified bacteriologically or chemically. One indicator for potable water is the amount of bacteria present. Health Director-General requirements limit bacterial impurities in food and drink is a number TPC < 100/ml sample.

Identification of Escherichia Coli conventionally using biochemical reactions test and inoculation, it requiring quite a long time, the biochemical tests is hard to do, and are not accurate. This is because the bacterial colony alleged *Escherichia coli* in selective media and deferential media is often not pure and mixed with other *Enterobacteriaceae* bacteria.

Identification of *Escherichia coli* using conventional methods requires 5-6 days, PCR method takes two days (48 hours). This is in line with the research conducted by the Infallible Radji et al. [19]; conventional methods take six days while the PCR method only takes 48 hours. The direct PCR methods can detect the presence of *Escherichia coli* in samples without isolation of colonies of bacteria first.[20] Thus the PCR method is more accurate and faster than conventional methods.

CONCLUSION

Genomic RNA template by RT-PCR can be used to detect bacteria Escherichia coli in drinking water refills more quickly and accurately than conventional methods.

Ethical Clearance- Taken from Hasanuddin University Ethics Committee, approval number: 195 / H4.8.4.5.31 / PP36-KOMETIK / 2017.

Source of Funding - Self-funding

Conflict of Interest- The author declares no conflict interest regard this research

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DOI Numher: 10.5958/0976-5506.2018.01389.X

Development of Organizational Effectiveness Indicators for Delivery Departments at the Secondary Level Hospitals affiliated to the Thai Ministry of Public Health

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ABSTRACT

Background: The indicators for organizational effectiveness are significantly for organization development in competition situation which rapidly change.

Aim: To develop organizational effectiveness indicators for delivery departments at the secondary level hospitals using quantitative method.

Method: The samples of this study were 226 head nurses of delivery units in the 113 secondary level hospitals affiliated to the Ministry of Public Health in Thailand. The scale development process of organizational effectiveness indicators was using eight steps of scale development by DeVillis. The content validity testing by seven experts with content validity index (CVI) was 0.96 and item-objective congruence Index (IOC) was a range of 0.80-1.00. The reliability of the questionnaire in the form of Cronbach's Alpha Coefficient was 0.94. The data were analyzed using confirmatory factor analysis.

Results: The components of organizational effectiveness indicators in delivery departments at the secondary level hospitals affiliated to the Ministry of Public Health consisted of four components with 24 indicators with the value of factor loading of each component between 0.69-0.93 at P-value <05. The sequence of components according to value by factor loading from highest to lowest value were as follows: (1) internal process (factor loading=0.93; $\overline{X}$ =4.20, SD=0.42), (2) strategic constituencies satisfaction (factor loading=0.77; $\overline{X}$ =4.18, SD=0.43), (3) goal accomplishment (factor loading=0.75; $\overline{X}$ =4.11, SD=0.47), and (4) resource acquisition (factor loading=0.69; $\overline{X}$ =4.07, SD=0.49). The confirmatory factor analysis model of organizational effectiveness of delivery departments was congruent with the empirical data (CMIN/df=1.46, GFI=1.00, AGFI=0.97, RMSEA=0.04). This model accounted for 58.70 % of the variance in the organizational effectiveness in delivery departments at the secondary level hospitals affiliated to the Ministry of Public Health.

Conclusion: This study demonstrated the development of organizational effectiveness indicators for delivery departments which will be an enable the organizational effectiveness training for division head nurses of delivery departments, and can be used to measure organizational effectiveness of delivery departments affiliated to the Ministry of Public Health.

Keywords : *Organizational Effectiveness ; Delivery Departments ; Secondary level hospitals.*

INTRODUCTION

According to the national strategic plan policy of Ministry of Public Health of Thailand identified that it will be public health 4.0 which supports the future of urban society, including trade and investment enhancement, technological advancement, especially reducing access to health systems. Heath organization should be adapt strategic planning of excellence (1) promotion and

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prevention excellence; (2) service excellence; (3) people excellence; and (4) governance excellence[1].The health organizations should be provide quality and safety services, including clients and health service providers satisfaction. The organizational effectiveness is the most important factors, it makes the organization survive in a changing of socioeconomic environment. The evaluation of organizational effectiveness is necessary as perceiving the level of organizational effectiveness in order to understand the way organizations achieve their goals and changing the strategic planning appropriately[2,3]. The nursing organizations, the delivery units' organizational effectiveness is important as it leads to enhancing the quality of nursing services, higher customer satisfaction, and higher employee retention, profitability, and the creation of competitive advantages for hospitalsand finally business success.

At present, the organizational effectiveness indicators have not been studied in delivery units which have many risk and emergency situations causing maternal and neonatal mortality rate including medical prosecution[4].From a literature review of the organizational effectiveness concepts, Kinicki and Kreitner's organizational effectiveness concept identified the components of organizational effectiveness consisted of four components: goal accomplishment, resource acquisition, internal process ,and strategic constituencies satisfaction[5]. To achieve organizational effectiveness, business leaders need to focus on aligning and engaging staff, the human resource management systems, and the structure and capabilities related to organizational strategies, its results presented in higher financial performance[6]. To fill the gaps of the organizational effectiveness studies in the field of delivery units, the aim of this study was to develop organizational effectiveness indicators for delivery departments at the secondary level hospitals.

METHOD

Population and Sample

The population consisted of 330 head nurses of delivery units from the secondary level hospitals affiliated to the ministry of public health from 165 hospitals from the 12 networks of Health Service Network in Thailand. The sample size was determined with a ratio of 10 respondents per parameter which was considered as the most appropriate[7]. A stratified random sampling was used by sampling from the Health Service Network's 12 networks, and simple random sampling and sample size calculation resulted in 226 head nurses of delivery units from 113 community hospitals.

Scale Development

The researcher developed and tested the quality of organizational effectiveness indicators of delivery units based on concept's Kinicki and Kreitner, along with Burn and Grove's method of research instrument development[8] with eight steps as follows:

1. Identifying the concepts of the variables

Selecting organizational effectiveness concepts that could be used in the research and building an understanding of organizational effectiveness, so the concept's Kinicki and Kreitner[5] was used in this study. These were composed of four components as (1) goal accomplishment; (2) resource acquisition; (3) internal process ;and (4) strategic constituencies satisfaction

2. Defining the concept

Defining each component of organizational effectiveness of delivery units which were (1) goal accomplishment wasachieving the delivery unit performance; (2) resource acquisition was the providing of resources and experts for professional nurses; (3) internal process was planning, guideline for quality nursing service enhancement, concerning safety and critical service management; and (4) strategic constituencies satisfaction was job satisfaction enhancement of nurses staff and stakeholders and good relationship with each other.

3. Designing of a scale

Designing a scale to be used to consider each indicator for measuring organizational effectiveness for delivery units of the secondary level hospitals affiliated to the Thai Ministry of Public Health. The scale must correspond with the objective of the research and content of the items. A measurement scale was designed in the form of a 5-point Rating scales that would be used to consider each of the indicators for measuring organizational effectiveness. The scale had labels ranging from "most real", "real", "not sure", "unreal" and "most unreal".

4. Seeking item review

Seeking item was reviewed from a team of subject matter experts with knowledge and experience in organizational effectiveness of delivery units, four expertises in the area, and with three experts in the field of survey instrument development. The content validity index (CVI) and item-objective congruence index (IOC) were analyzed[7].

5. Conducting preliminary item tryouts

Conducting a preliminary pretest of the items with 30 head nurses of delivery units of the secondary level hospitals was affiliated to the Ministry of Public Health of Thailand. Data were used to calculate indicators reliability by using Cronbach's Alpha Coefficient to obtain internal consistency of the overall scale, each component's reliability, item-total correlations, item-item correlations, and alpha-if-item deleted reliability coefficients.

6. Performing field tests

The sample group in this study was composed of 226 head nurses of delivery units based on the scale development concept of DeVillis[8].

7. Conducting construct validity studies

The data was collected from head nurses of delivery units. The construct validity was using confirmatory factor analysis.

8. Evaluating the reliability of the scale

The reliability of the scale was analyzed in the form of Cronbach's Alpha Coefficient.

Data Analysis

The data were analyzed using the package computer programs: (1) descriptive statistics were used to determine means and standard deviations; (2) confirmatory factor analysis was performed to test for the goodness of fit of the structural model of the factors, weights were assigned to constructing the indicators and empirical data to determine the weights of the main variables used in constructing the indicators[9]; and (3) Cronbach's Alpha Coefficient provided a measure of the internal consistency of the scale and describes the extent to which all the items in a test measure the same construct[10].

FINDINGS

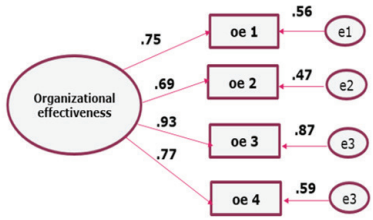
Two hundred twenty-six head nurses of delivery units responded to answer the self-administered questionnaire. Most of the participants were female (98.20%) and a half were aged 46–55 years (45.60%). Most of them graduated with bachelor degrees (85.40%) and having experiences in delivery management within a range of 5–10 years (37.10%).

The research found the 24 indicators of four components of delivery-unit effectiveness.as follows: (1) goal accomplishment (4 indicators); (2) resource acquisition (5 indicators); (3) internal process (7 indicators); and (4) strategic constituencies satisfaction (8 indicators). The measurement scale was designed in the form of a 5-point Rating scales that would be used to consider each of the indicators for measuring the delivery units' organizational effectiveness. The scale had labels ranging from "most real", "real", "not sure", "unreal" and "most unreal". Item content for the scales was selected that corresponded to the objective being studied by the researcher and the indicators[7].

Item reviews obtained a content validity index (CVI) of 0.96 and item-Objective Congruence Index (IOC) with a range of 0.80-1.00 from seven subject matter experts. The preliminary tryout of the items was conducted with 30 head nurses of delivery units. Data were used to calculate the instrument's components reliability by using Cronbach's Alpha Coefficient. The internal consistency of the goal accomplishment component was 0.84; the resource acquisition component was 0.81; the internal process component was 0.92; strategic constituencies satisfaction component was 0.90 and the overall reliability was 0.94. The corrected item-total correlation was at 0.41-0.82. The item-item correlation matrix was at 0.30-0.70 for more than 50% of the correlations, and the alpha if item was deleted ranged from 0.93-0.95, showing that the scale's internal consistency value was at a satisfactory level.

Researchers were able to collect data from 226 completed forms, and to conduct statistical data analysis by performing confirmatory factor analysis. Pursuant to the confirmatory factor analysis found the organizational effectiveness model to be consistent with the evidence-based data as a perfect fit by considering CMIN/df < 3, GFI > 0.90, AGFI > 0.90, RMSEA <0.05[9,11]. This shows that the main hypothesis was accepted.

The research model fitted well to empirical data. The result of factors score was found that the most of four important components was administrative potential of organizational effectiveness for the delivery units by internal process (factor loading=0.93; $\overline{X}$ =4.20, SD=0.42), strategic constituencies satisfaction (factor loading=0.77; $\overline{X}$ =4.18, SD=0.43), goal accomplishment (factor loading=0.75; $\overline{X}$ =4.11, SD=0.47),and resource acquisition (factor loading=0.69; $\overline{X}$ =4.07, SD=0.49), respectively (Figure 1, Table 1). The causal model has congruence with the empirical data (CMIN/df=1.46, GFI=1.00, AGFI=0.97, RMSEA=0.04). The model accounted for 58.70 % of the variance in the organizational effectiveness in delivery departments (Figure 1)



(CMIN/df=1.46 ; GFI=1.00 ; AGFI=0.97 ; RMSEA=0.04)

Figure1: Confirmatory factor analysis model of organizational effectiveness of the delivery departments

Table 1: The organizational effectiveness indicators for the delivery units of the secondary level hospital affiliated to the Thai Ministry of Public Health

Component name	$\overline{X}$	**SD**	**Component name**	$\overline{X}$	**SD**
I. Goal accomplishment	**4.11**	**0.47**	**II. Resource acquisition**	**4.07**	**0.49**
1. Reviewing the outcomes of the work.	4.16	0.58	5.Having a monitor system for medical supplies in a state of readiness.	4.29	0.64
2.Reviewing the progress of the operations.	4.14	0.55	6. Allocating the budget for quality and adequacy of medical supplies and materials.	4.16	0.66
3. Organizing an organization for policy implementation each units.	4.13	0.60	7. Defining the qualifications of personnel in accordance with the job.	4.08	0.54
4. Having the goals achievement.	4.01	0.49	8. Allocating the budget for professional nurses to be trained and develop their expertise in the job.	4.01	0.78
			9. Providing nursing staff workload appropriate for the proportion of clients.	3.80	0.75
III. Internal process	**4.20**	**0.42**	**IV.Strategic constituencies satisfaction**	**4.18**	**0.43**
10. Using nursing process as a tool.	4.33	0.55	17.All level of nursing staff must be involved in the operation of the delivery unit.	4.38	0.57
11. Having a standardized practice.	4.28	0.52	18.Nursing staff have good relationship each other	4.22	0.59
12. Readiness for taking emergency situations	4.22	0.53	19. Nursing staff have good relationship with clients.	4.21	0.52
13.Having effective risk management system.	4.16	0.56	20. Having a good teamwork.	4.20	0.59
14.Providing operational plan consistent with the strategy and vision of the nursing organization	4.19	0.55	21.The personnel should be recognition from clients.	4.18	0.61
15. Operating according to the plan	4.10	0.53	22. The level of clients' satisfaction meet the goals of the delivery units.	4.17	0.56
16. Having effective communication systems	4.09	0.53	23. Stakeholders are satisfied with the delivery units' performance.	4.06	0.53
			24.Staff are satisfied in the job.	3.99	0.54

DISCUSSION

The indicators for organizational effectiveness in delivery departments composed of four components and 24 indicators. Concerning, the goal accomplishment is the most widely used effectiveness criterion for organizations. Key organizational results or outputs are compared with previously stated goals or objectives. Effectiveness, relative to the criterion of goal accomplishment, was gauged by how well the organization meets or exceeds its goals[2,5]. The organizations as delivery departments should be organized to facilitate policy implementation in each delivery unit, reviews the progress of the operations, and the results of the work. From the study Kamolbutr [12] found that the general hospital affiliated to Thai Ministry of Public Health was high level of organizational effectiveness in the aspect of goal accomplishment component.

Resource acquisition, this second criterion was defined as the qualifications of nursing staff related to nursing tasks, appropriated nursing workload, allocating the budget for nursing training, allocating the budget for quality and adequacy of medical supplies and materials, and monitor system for medical supplies were similar to the study from Khaewpordtook. and Ratchukul found that the level of organizational effectiveness in general hospitals and each component of its were in the high levels. Human resources, budget and materials were potential components for the organization's operations. The medical devices were readiness and the monitor system was efficient maintenance[13].

Internal process was referred as the "healthy systems" approach. An organization will be a healthy system if it has effective communication systems , employee loyalty and commitment, job satisfaction, and trust prevail[2,5]. The delivery units should be three priorities on using nursing process as a tool, having standardized practices, and readiness for taking emergency situations whereas the previous research studies in general units put priorities on the operating with efficient management and planning, having effective communication and risk management[12,13].

Lastly, the present study found that strategic constituencies satisfaction was stakeholder satisfaction. To achieve satisfactions, the head of the delivery units should put priorities on nursing staff involvement, interpersonal relationship of nursing staff each other and with clients, and a good teamwork whereas Khaewpordtook and Ratchukul who studied in general units found that the component of strategic constituencies satisfaction was in the first rank of components with high level[13].

CONCLUSION AND IMPLEMENTATION

The organizational effectiveness components and indicators of delivery departments at the secondary level hospitals affiliated to the Thai Ministry of Public Health was being construct validity, accuracy, and consistency with Kinicki and Kreitner's organizational effectiveness concept[4,7]. The head of delivery units should put priority according to the sequence of factor loading of each component from highest to lowest value being (1) internal process; (2) strategic constituency satisfaction; (3) goal accomplishment; and (4) resource acquisition. This study found the new knowledge of the organizational effectiveness indicators for delivery departments, the head nurses of delivery units should be trained to use this organizational effectiveness measurement for delivery departments affiliated to the Ministry of Public Health.

Source of Funding: A part of the study was supported by Christian University of Thailand in 2018.

Conflict of Interest : The authors have no conflicts of interest.

Ethical Clearance: Ethical Clearance was taken from the ethical committee of Christian University of Thailand (registration no. N.38/2559) on June 3, 2017. The protected samplings were obtained as personal information and ethical concerns which includes informed consent and maintaining confidentiality. They had the right to cancel participation in the study at any time without any impact on participants.

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DOI Numher: 10.5958/0976-5506.2018.01390.6

Incidence of Cleft Lip and Palate in Karbala Province

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ABSTRACT

Introduction: Cleft palate and/or cleft lip (CP/CL) are the most common congenital anomalies in the maxillofacial and oral region. This study was conducted to obtain the accurate estimates of the frequency and other epidemiological features of oral clefts in Karbala province.

Materials and Method: In this cross-sectional study that conducted at Maxillofacial Unit, Karbala Teaching Hospital as the main hospital in Karbala city from the period of January 2015 till March 2018. 7321 cases were randomly selected by using a simple random method from hospital documented files of infants. Clinical and demographic factors relating to diagnosed cases, including Birth order Prevalence, Baby weight prevalence and Prevalence of Family history as other congenital anomalies were recorded for analysis.

Results: The incidence rate of CL/P in Karbala province was 1.77 per 1,000 live births. 53.8, and 46.2 were the percentage of bilateral and unilateral cleft cases respectively. Oral clefts were found to be more common in male than female births (male/female ratio=6/4). The first child incidence rate (41.67) was the highest from the birth order prevalence in comparing with others birth prevalence. Regarding weight prevalence as the important parameter in cleft lip/palate prevalence children with the underweight were the highest in cleft lip/plate prevalence.

Conclusion: In conclusion, this study and other studies show that the incidence of cleft deformities in different populations depend on genetic factors, ethnicity and environmental conditions these causes have important roles in frequently conflicting results. So integrating genetic analysis into epidemiologic studies and environmental pollution as a predisposing factor for CL/P incidence will be necessary for future studies.

Keywords: *Cleft lip, Cleft palate, Epidemiology, Incidence, Karbala Province, Iraq.*

OBJECTIVE

Although there have been a few published epidemiological investigations concerning oral clefts in Iraq [(1)]. There is a lack of information about the prevalence of cleft lip and palate in Karbala city. Considering the importance of obtaining accurate estimates of the frequency and other epidemiological features of oral clefts, this study was conducted in order to assess the incidence and related factors of CL/P among live births in Karbala province, Iraq.

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INTRODUCTION

Definition and description : A cleft is an opening or fissure may occur in lip as Cleft lip (cheiloschisis) or in palate called cleft palate (palatoschisis) can also occur together as cleft lip and palate (CL/P) [2]. Cleft palate and/or cleft lip (CP/CL) are the most common congenital anomalies in the maxillofacial and oral region and exhibit a multi-factorial etiology, including genetic and environmental factors [3,4]. Facial appearance and functions disorder such as hearing, phonation, mastication, deglutition, and ventilation are altered by this malformation [5]. Other parts of the face such as ears, eyes, nose, cheeks, and forehead could be affected by cleft. Paul Tessier in 1976 described 15 lines of cleft which called Tessier clefts [2]. Cleft lip is partial or incomplete cleft formed in the top of the lip or it continues into the

nose as a complete cleft. Cleft (CL/P) can occur as a one-sided (unilateral) or two-sided (bilateral).

Embryology: In facial morphogenesis, neural crest cells migrate into the facial region, where they form the skeletal and connective tissue and all dental tissues except the enamel [6]. Vascular endothelium and muscle are of mesodermal origin. The upper lip is derived from medial nasal and maxillary processes. Failure of merging between the medial nasal and maxillary processes at 5 weeks' gestation, on one or both sides, results in cleft lip.

Cleft can occur in numerous ways:

1. Defective growth of palatal shelves
2. Lack of contact between shelves
3. Rupture after fusion of shelves.
4. Failure of the shelves to attain a horizontal position

The secondary palate develops from the right and left palatal processes. Fusion of palatal shelves begins at 8 weeks' gestation and continues usually until 12 weeks' gestation. One hypothesis is that a threshold is noted beyond which delayed movement of palatal shelves does not allow closure to take place, and this results in a cleft palate[7] .

Etiology

Cleft lip and cleft palate as congenital abnormalities have linked to maternal hypoxia. Other environmental factors that have been studied include, maternal diet, pesticide exposure, anticonvulsant drugs, alcohol drinking; cigarette smoking; exposure of nitrate compounds, organic solvents, heavy metals and retinoids intake; which are members of the vitamin A family; and illegal drugs intake like cocaine, crack cocaine, heroin, etc [7].

In the US and in other countries, many epidemiologic studies of (CL/P) that include the difference in risk of orofacial clefts development have been discussed on the incidence of cleft lip, cleft palate, and cleft lip and palate. Their results explain a wide variation in the developing clefts risk within and among races. In addition, there is an epidemiological different in clefts cases that associated and non-associated with malformations [8]. Generally, the incidence of CL/P is estimated to be between 0.8 and 1.7 cases per 1,000 live births[9, 10]. Internationally, during the period 2000 to 2005, the overall prevalence of cleft lip with or without cleft palate was 9.92 per 10,000 live births. Most of the epidemiological studies on CL/P have been conducted in the Asian, Europe and USA. In Iran, the overall incidence of oral clefts was reported to be 1.03 per 1,000 births [11]. Several studies have demonstrated that the incidence is highest among Asians, followed by Caucasians, and lowest in people of African descent [12, 13]. The clefts incidence may be affected by racial, geographic and socioeconomic factors [7]. Approximately 1 out of 1000 born children have a cleft lip and/or a cleft palate [14, 15] .The live births Prevalence rates of Cleft lip with or without Cleft Palate (CL +/- P) and cleft Palate alone (CP) varies within different ethnic groups. The highest prevalence rates for (CL +/- P) are reported for Native Americans and Asians. Africans have the lowest prevalence rates (Kirby et al., 2000), (Forrester & Merz, 2004). World Health Organization shows the epidemiology of typical orofacial Clefts through mention the registered cumulative data of different countries [16].

Diagnosis

Cleft lip can be easily diagnosed by performing ultrasonography in the second trimester of pregnancy when the position of the fetal face is located correctly [17]

MATERIALS AND METHOD

Materials

The selected samples are newly born babies. Electronic Baby Scale BW-SCB1 (use to measure the babies weight), and 12-megapixel I phone mobile camera were used as Instrument in this research.

Methods

This is a descriptive study that conducted at Maxillofacial Unit, Karbala Teaching Hospital as the main hospital in Karbala city, from the period of January 2015 till March 2018. Iraqi children who born in Karbala province were the samples that depended on this study. 7321 cases were randomly selected by using a simple random method from hospital documented files of infants. The newly born were clinically examined with aid of a pediatric physician. Extra-oral, intraoral examination and recording the information in case sheet that filled with patients families together were included in this study. The demographic data of case sheet were name, gender, weight, date of birth, address, residence of baby family, and any congenital anomalies that

related to the type of cleft lip/ cleft palate according to Millard classification 1976. Finally, the collected data were analyzed statistically by using Excel of the Microsoft Office Professional Plus 2013.

RESULTS

From the total of 7321 cases that shown in table 1 Oral clefts were found to be more common in male than female births (male/female ratio=6/4). Twelve children with CL/P were born during study period. The incidence rate of CL/P was 1.77 per 1,000 live births. 53.8, and 46.2 were the percentage of bilateral and unilateral cleft cases respectively.

Table 1 life and death cleft cases

cases	males	females	No. of cases
non cleft cases	3122	4187	7309
cleft life cases	6	4	10
cleft dead cases	1	1	2
total	3129	4192	7321

Distribution of newborns which affected with CL/P with the bilateral cleft palate (CL/P) was the most prevalent type of cleft (58%) as shown in table 2 followed by unilateral cleft lip (42 %).

Table 2 Cleft types in life cases

Cleft life cases						
Type of Cleft	Unilateral		Bilateral		Total	
	No.	%	No.	%	No.	%
CL	3	60	1	14	4	33
CP	1	20	4	57	5	42
CLP	1	20	2	29	3	25
Total	5	100	7	100	12	100
CL: cleft lip; CP: cleft palate; CLP: cleft lip and palate.						

In table 3 it's easy to see that, the percentage of the first child was the highest 41.67 from the birth order prevalence in comparing with others birth prevalence.

Table 3: Birth order Prevalence

Birth order Prevalence				
	First	Second	Third	fourth & above
Cleaft lip	2	0	1	0
Cleaft palate	2	1	1	2
cleaft lip and palate	1	1	0	1
Total	5	2	2	3
Percentage	41.67	16.67	16.67	25.00

In discussing the baby weight prevalence as the important parameter in cleft lip/palate prevalence and according to the data in table 4 underweight, average weight and overweight were highly respectively in cleft lip/plate prevalence

Table 4 Baby weight prevalence

Baby weight prevalence	
	cleft newborn
under weight	6
average weight	5
over weight	1
Total	12
Percentage	100.00

Table 5 Prevalence of Family history of clefts

Prevalence of Family history of clefts		
	present	**non present**
Cleaft lip and palate	4	8
Total	4	8
Percentage	33.33	66.67

DISCUSSION

This cross-sectional study was carried out to explore the epidemiological investigations concerning oral clefts in Karbala province, Iraq. The overall incidence of CL/P was found to be 1.7 per 1,000 live births. The previous studies in Iraq show that the incidence rate of CL/P was 1.2 per 1,000 live births in Al Anbar provinc[1]. During 2008, another research in Erbil City mention the prevalence of cleft lip and palate was 2 per 1000 births [18] .Internationally, the overall incidence of CL/P was 1.9 per 1,000 live births in Iran 1.94 per 1,000 in the Philippines [19], 1.91 per 1,000 in Pakistan [19] .1.81 per 1,000 in Korea [21]. 1.53 per 1,000 in Scotland [22], 1.39 per 1,000 in Jordan [23], 0.77 per 1,000 in the USA [13] and 0.34 per 1,000 in Africa [24]. It seems that the incidence of CL/P in Iraq is similar to that in Iran, Pakistan and some Asian countries, but higher than Scotland, Jordan, USA and Africa. Environmental factors and genetic susceptibility as variations may be the cause of this difference in the rate of CL/P among different populations and that very clear in this study results. The present study showed that male predominates in all types of clefts that similar in other studies results in Iraq [25] as well as in others countries (19). Regarding the cleft types, Cleft lip and palate was the most common type that shown in infected cases and these results agree with the most previous studies that registered in the WHO database [16]. In addition, there is agreement with others studies that show the incidence rate of CL/P in Iraq may reflect an increasing with environmental effect due to wars pollutions as a direct causes [1], [19] or indirect causes like hypoxia during pregnancy period [17, 26]

CONCLUSION

The overall prevalence for congenital cleft deformities in Karbala province was 1.7 per 1,000 live births, this result close to the other studies findings in Iraq and surrounding countries. Regarding the prevalence of cleft deformities in different populations, genetic factors, ethnicity and environmental conditions have important roles in frequently conflicting results. So integrating genetic analysis into epidemiologic studies will be necessary for future studies.

Ethical Clearance- This research is approved by the Ethical committee that held in Ibn Hyyan Medical University.

Source of Funding- Self sponsor

Conflict of Interest - Nil

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DOI Numher: 10.5958/0976-5506.2018.01391.8

Isolation and Identification of *Aggregatibacter Actinomycetemcomitans* Bacteria by Culturing and Polymerase Chain Reaction Methods in Patients with Chronic Periodontitis

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ABSTRACT

Aggregatibacter actinomycetemcomitans bacterium is a portion of the normal flora in healthy persons however it involves in the pathogenesis of chronic periodontitis. Present study aimed to isolate *Aggregatibacter actinomycetemcomitans bacteria* and their cytolethal distending toxins from chronic periodontitis patients. Forty chronic periodontitis patients were incorporated in the study. From 2 sites with the deepest probing pocket depth, subgingival biofilm samples were gathered and transferred to laboratory for isolation of *Aggregatibacter actinomycetemcomitans* bacteria by routine culture method .Also molecular isolation of *Aggregatibacter actinomycetemcomitans* bacteria and cytolethal distending toxins using polymerase chain reaction technique were performed. Statistical analysis revealed that *Aggregatibacter actinomycetemcomitans* amplicons present in (75%) of the patients and cytolethal distending toxins amplicons present in (70 %) of the patients. Also amplicons of cytolethal distending toxin A were found in (35%) of the patients while amplicons of cytolethal distending toxin B were found in (55%) of the patients and amplicons of cytolethal distending toxin C were found in (65%) of the patients. *As a conclusion, Aggregatibacter actinomycetemcomitans* bacteria and their virulent factors have a considerable role in chronic periodontitis progression.

Keywords: *Aggregatibacter actinomycetemcomitans, subgingival biofilm , polymerase chain reaction.*

INTRODUCTION

*Aggregatibacter actinomycetemcomitans (*Aa) represents a facultative anaerobic gram-negative, coccobacillus bacterium and it considered as an element of oral flora [(1)]. *Actinobacillus actinomycetemcomitans* is a member of the genus *Actinobacillus* [(2)]. *Aggregatibacter actinomycetemcomitans* bacterium is a main causative agent of some types of periodontitis [(3)]. Chronic periodontitis is an infectious disease that cause a damage to the teeth-supporting tissues as a result of a complex group of inflammatory conditions [(4)].

Aggregatibacter actinomycetemcomitans has been associated to a several infectious diseases, including , osteomyelitis , lung and brain abscesses, subcutaneous abscesses, septic endocarditis, cardiovascular diseases [(5,6)] and chronic periodontal diseases [(7-9)]. An association between periodontal diseases and *Aggregatibacter actinomycetemcomitans* had been revealed by several studies [(10-12)].

Aggregatibacter actinomycetemcomitans bacteria have several virulence factors such as lipopolysaccharides (LPS), bacteriocins, adhesins, leukotoxin (Ltx) and cytolethal distending toxin (Cdt).

The Cdts are formed by numerous bacteria such as *Aggregatibacter actinomycetemcomitans*, *Shigella dysenteriae*, *Campylobacter* sp. , *Helicobacter* sp., *Escherichia coli*, *Salmonella enterica*, and *Haemophilus ducreyi* [(13–19)].

Three genes encode Cdt, including Cdt *A*, Cdt *B*, and Cdt *C* [(20–23)]. The most important function of the Cdt is its capacity to disrupt cell cycle by arresting the cells in G2 phase [(24)] . It has been shown that CdtB represents

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a DNase [25]. The establishment of DNA-damage-dependent checkpoint leads to blockage of cell cycle progression [26] that eventually leads to apoptosis [27]. The expected role of CdtC and CdtA is to assist in the entry of CdtB into the cell. Cytolethal distending toxin (A) has a carbohydrate-binding domain and it localize to the plasma membrane [28].

MATERIAL AND METHOD

The participants of current study were selected from patients visiting Periodontics Department in Collage of Dentistry – University of Babylon . Forty chronic periodontitis patients with the age ranged (30 – 60) years were incorporated in present study, all patients suffering from generalized chronic periodontitis as the criteria identified by American Academy of Periodontology [29].

Participants in the study should have no less than twenty natural teeth and have a good medical health. Exclusion criteria include: periodontal therapy twelve months before begining of the study, antibiotic therapy during six months before examination, pregnancy and breast-feeding.

Clinical procedures

Patients of the study received a total -periodontal assessment to measure plaque index (PI) [30], gingival index (GI) [31] and bleeding on probing(BOP) [32]. Also, clinical attachment loss (CAL) and probing pocket depth (PPD) were calculated from 6 surfaces of all teeth using Michigan O probe with William,s markings.

Microbial sampling

For each patient, a pooled subgingival samples were gathered from 2 sites with the deepest PPD. After removing of supragingival biofilm from chosen sites , the latter were dried and secluded with cotton pellets. From every sites, subgingival biofilms were gathered using sterilized curettes and a sterile paper points that entered to base of the pocket and left for thirty seconds [33], then placed in tube containing Brain Heart Infusion broth. Samples were transfer to laboratory for isolation and detection of studied bacteria by routine culture method which was done by using selective media and anaerobic condition, also molecular isolation of *A.actinomycetecomitans* bacteria and Cdts using polymerase chain reaction (PCR) technique were performed.

Bacterial detection by culturing

The anaerobic incubation of the samples spread on blood agar for 3-4 days. Presence of *A. actinomycetemcomitans* was determined by culturing and biochemical test**. The cultivation performed on** enriched selective media that used for the isolation and possible documentation of *A.actinomycetecomitans* [34].

Detection of Aa by PCR

By using particular primers for *Aggregatibacter actinomycetemcomitans* and Cdts [35], the PCR method was done following the protocol described by Cortelli *et al*. [36].

After bacterial DNA extraction from the clinical samples, PCR was performed to detect positive samples using specific primers for the 16S ribosomal DNA gene (35). By using electrophoresis with Agarose gel (1.5%) stained by ethidium bromide (0.5 mg/ml), amplified products were analyzed.

RESULTS

The variables of present study were statistically analyzed by Statistical Process for Social Science (SPSS edition 20) by percentage and mean. The mean ages of the patients included in the present study was (47.98± 7.16) , also 55% of the patients were from male gender .Smokers patients represents 40% and the average number of the teeth presents in the mouth for all patients was (23.48±2.88) as shown in table 1. Means of clinical periodontal parameters include (1.81, 1.92, 52.38, 4.75 and 2.90) for PI, GI, BOP, PPD and CAL respectively as revealed in table 2.

Table 1: Demographic criteria of the patients.

Demographic criteria	Age (Mean ± SD)	Gender Number (percentage)	Smoking status Number (percentage)	Number of teeth (Mean ± SD)
	47.98± 7.16	F =18(45%) M = 22(55%)	S=16(40%) NS= 24 (60%)	23.48±2.88

Table 2: Periodontal measurements including (PI, GI, BOP, PPD and CAL).

Clinical parameters	PI (Mean ± SD)	GI (Mean ± SD)	BOP (Mean ± SD)	PPD (Mean ± SD)	CAL (Mean ± SD)
	1.81±0.33	1.92±0.38	52.38±5.92	4.75±0.61	2.90±1.98

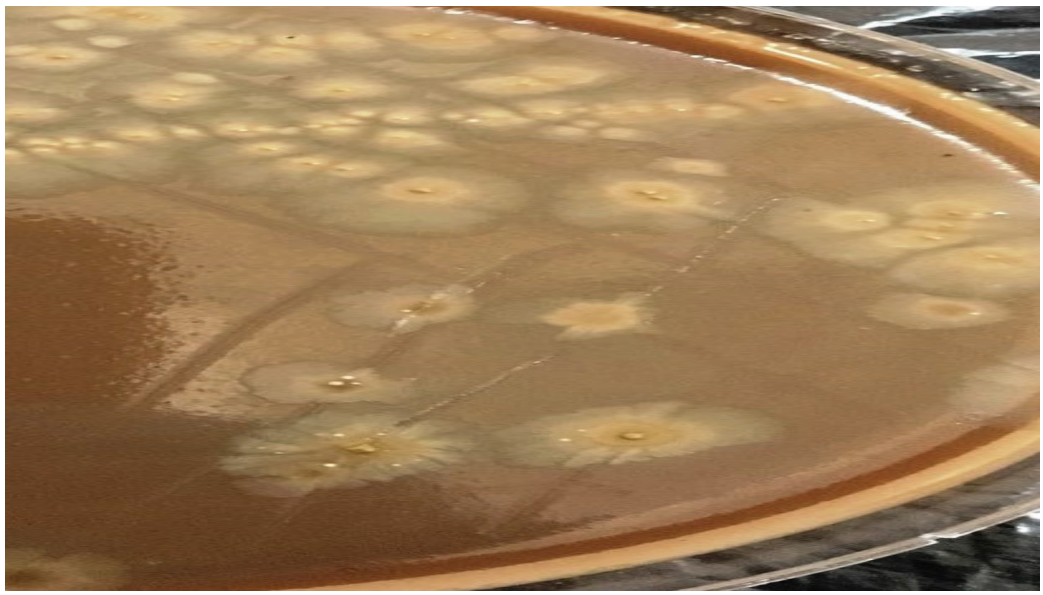

Figure (1): *A. actinomycetemcomitans* bacterial colonies.

Results of current study showed that *A. actinomycetemcomitans* bacteria were found in 16 (40%) patients using culturing method as shown in figure (1). Using PCR technique, *A. actinomycetemcomitans* amplicons were found in 30 (75%) patients and Cdt amplicons were found in 28 (70 %) patients. Also Cdt A amplicons were found in 14 (35%) patients while Cdt B amplicons were found in 22 (55%) patients and Cdt C amplicons were found in 26 (65%) patients.

DISCUSSION

In present study *A. actinomycetemcomitans* bacteria were found in 40% and 75% of the patients using culturing and PCR techniques respectively. In a previous study, Colombo *et al.* [37] suggested that different genotypes of *A. actinomycetemcomitans* might be present in high levels in periodontal health or chronic periodontitis.

Important virulence factor of *A. actinomycetemcomitans* ,Cdt , blocks cell cycle progression in T lymphocytes and epithelial cells. The present study succeed in detection of Cdt A, Cdt B and Cdt C genes in (35%), (55%) and (65%) of the patients respectively.

In previous study (85 %) of Cdt gene polymorphism has been detected in periodontitis patients [38] . Prevalence of Cdts is extremely variable , forty three of fifty strains from chronic periodontitis patients were positive for all Cdt genes [39]. Other study showed that only 12% of the diseased sites had the Cdt genes [40], while Fabris *et al.* revealed that thirty nine of forty patients were positive for Cdt genes [41].

Aggregatibacter actinomycetemcomitans Cdt may cause imbalance in the periodontal connective tissue remodeling, by excessive bone resorption caused by over-stimulated osteoclast. It has been shown that *A.actinomycetecomitans* Cdt is sufficient to downregulate Osteoprotegerin (OPG)expression and to provoke the receptor activator of nuclear- factor kappa B ligand (RANKL) upregulation in periodontal cells and gingival fibroblasts [42].

As well as, *A.actinomycetecomitans* Cdt disrupt development of human CD4+ and CD8+ T lymphocytes [43-46], also peripheral blood mononuclear cells attacked

by *A.actinomycetecomitans* Cdt capable to secrete a high numbers of pro-inflammatory cytokines and interleukins (IL), such as Interferon **Gamma** (IFN-γ) , IL-8, IL-6 and IL-1β [47]. It is believable that *A.actinomycetecomitans* Cdt cause an innate immune response stimulation and increase in the secretion of a particular cytokines, that aggravate inflammation, reduce T cell activity and provide an appropriate environment for bacterial propagation.

CONCLUSION

As a conclusion, *Aggregatibacter actinomycetemcomitans* bacteria and their virulent factors have a considerable function in the evolution of chronic periodontitis.

Ethical Clearance: All participants received learned consent to join in current study , the study was accepted by Ethics team of Collage of Dentistry / Babylon University .

Source of Funding : Self funding.

Conflict of Interest : No conflict of interest in current study.

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DOI Numher: 10.5958/0976-5506.2018.01392.X

Inhibition of Propolis and Trigona spp's honey towards Methicilin-Resistant Staphylococcus aureus and Vancomycin-Resistant Staphylococcus aureus

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ABSTRACT

Propolis and Trigona spp honey have functioned as anticancer, antiviral, antifungal and antibiotic. Isolates of Staphylococcus aureus resistant to Methicillin and Vancomycin found in the surgical treatment room and ICU of Ratu Zalecha Hospital Martapura. The purpose of this research was to determine the inhibitory zone of MRSA, VRSA to the propolis extract and honey of Trigona spp at the concentration of 200 mg/ml, 400 mg/ml, 600 mg/ml, 800 mg/ml and 1000 mg/ml. Also to know the concentration of the propolis extract and honey of Trigona spp in inhibiting the growth of MRSA, VRSA. The type of this research was true experimental with the design of Pretest-Posttest With Control Group Design. The study was conducted from April 2015 to June 2015 in Banjarbaru, South Kalimantan Indonesia. The objects of research are propolis and honey of Trigona spp hives in the Barabai area. The dependent variable was the inhibition zone of MRSA and VRSA in Hinton Muller` media containing ethanol extract of propolis and honey of Trigona spp in some different concentrations measured from the formed diameter of inhibition zone. Data were analyzed by One Way ANOVA test and Kruskal-Wallis test at 95% confidence level. The results of the research showed that there were differences in MRSA and VRSA inhibition zone against various concentrations of Trigona spp honey. The strength of Trigona spp honey which was in inhibiting the growth of MRSA was 1000 mg/ml concentration with a diameter of 25.2 mm. VRSA at 1000 mg/ml concentration with a diameter of 26.6 mm. The strength of Trigona spp propolis extract which is useful in inhibiting the growth of MRSA is at 1000 mg/ml concentration with a diameter of 17.8 mm. VRSA at 1000 mg/ml concentration with a diameter of 16.4 mm.

Keywords: *Propolis; Honey; Trigona spp; Staphylococcus aureus; Resistant*

INTRODUCTION

The case of Methicilin-Resistant Staphylococcus Aureus (MRSA) in 1961 was found in England while in the USA was discovered in 1968[1]. In Asia, the prevalence of infection of MRSA reaches 70%. While in Indonesia in 2006 the incidence is 25,5%. The first clinical isolate of Vancomycin-Resistant Staphylococcus aureus (VRSA) reported in the USA in 2002[2]. In Medical College and Hospital, Midnapore, West Bengal, India recovered from 100 isolates of Staphylococcus aureus strains to 70% into MRSA, 54.3% as (VRSA), and 54.3% for both MRSA and VRSA[3]. At the Teaching Hospital, in Sari, Iran of Staphylococcus aureus isolates were 31.31% and 16.1%, indicating MRSA is vancomycin-intermediate Staphylococcus aureus (VISA)[4]. Hospital Khartoum, Sudan found 41% of MRSA, 12% VISA[5] MRSA in poultry samples in Serdang, Malaysia was found 9 out of 30 isolates studied. The spread of pathogens and not only in hospitals but can also spread in poultry[6].

In Indonesia, research of Vancomycin Resistant Staphylococcus Aureus (VRSA) found in 10 out of 64 isolates (15,6 mg/ml) and the stethoscope membrane in Margono Soekarjo hospital, Purwokerto[7]. A study on steteskop at a regional hospital in South Kalimantan also showed the presence of Staphylococcus aureus[8]. The strain of Staphylococcus aureus which is resistant towards Methicilin and Vancomycin found in the surgery room and ICU at RSUD Ratu Zalecha Martapura[9].

One of the natural substance that was believed empirically has a lot of benefits and relatively safe is Propolis and honey from the bee. Various bee species produce propolis for self-defense. Propolis mostly used to cure various disease in the past last year[10]. The type of bee beside Apis spp is Trigona spp, this bee produces honey than other and rarely farmed. The estimate contains propolis from this species is more than Apis spp[11].

Propolis has some benefits as anticancer, antivirus, antifungal and antibiotics[11]. Research about the advantages of Trigona sp's propolis from Kabupaten Bulukumba, South Sulawesi can inhibit the S. mutant growth. In vitro, research of Agustina[12] shows the propolis extract from a bee in Malang can give an impact and inhibit the positive gram bacteria Staphylococcus epidermidis growth in a concentration 60 mg/ml and negative gram bacteria Pseudomonas aeruginosa growth in concentration 70 mg/ml. This research about the effectivity of Propolis and Trigona spp hone bee from south Kalimantan antibacterial effect has proven that have resistivity towards Salmonella typhi and Staphylococcus aureus[13].

The aim of this research was to determine the inhibitory zone of MRSA, VRSA to the propolis extract and honey of Trigona spp at the concentration of 200 mg/ml, 400 mg/ml, 600 mg/ml, 800 mg/ml and 1000 mg/ml. Also to know the effective concentration of the propolis extract and honey of Trigona spp in inhibiting the growth of MRSA, VRSA.

MATERIALS AND METHOD

The type of research that used is True Experiment Method with Posttest only control design, which is having a resistivity test for Propolis extract and Trigona spp honey in a concentration 200 mg/ml, 400 mg/ml, 600 mg/ml, 800 mg/ml and 1000 mg/ml. The object in this research is Propolis and Honey from Trigona spp beehive from Barabai.

Independent variable in this research is Propolis extract and Trigona spp honey bee with a concentration 200 mg/ml, 400 mg/ml, 600 mg/ml, 800 mg/ml and 1000 mg/ml. The dependent variable in this research is resistivity of MRSA and VRSA in Muller Hinton media (Merck) which contain the ethanol extract of propolis and Trigona spp honey bee in some variant concentration which measured from the diameters of the resistivity that form.

About 20 grams of Propolis extracted with 200 ml ethanol 70% using maceration technique in 3 days filtered with filter paper and the propolis filtrate concentrated which evaporated the ethanol in 50^{o}C using a water bath, until obtaining the concentrated extract. This thick propolis extract being added with Propylene glycol with the same weight. This concentration 1000 mg/ml will be diluted using sterile aqua dest to obtain a concentration 200 mg/ml, 400 mg/ml, 600 mg/ml, 800 mg/ml. It also should be done with bee materials. Antimicrobial test for Propolis and bee using a diffusion method well technique. Measure the diameters of the transparent circle in mm using a ruler around the well which contain material test to determine the resistivity of Propolis/Trigona spp honey bee towards bacteria and retested in 5 times[12].

RESULTS AND DISCUSSION

Result of Antimicrobial Test for Honey and Propolis Trigona spp

Antimicrobial test for honey and propolis extract Trigona spp towards isolate MRSA and VRSA shows the variation diameters of inhibition. Inhibition data of honey and propolis extract shows in table I-4.

Table 1. Inhibition zone honey Trigona spp towards MRSA, VRSA

Concentration Honey *Trigona spp*	Inhibition Zone Honey *Trigona spp* (mm)									
	MRSA					VRSA				
	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
200mg/ml	0	0	0	0	0	0	8	0	0	0
400mg/ml	9	8	16	10	13	15	15	15	15	10
600mg/ml	15	19	25	17	21	23	21	18	21	18
800mg/ml	17	22	27	21	21	25	25	25	23	22
1000mg/ml	22	24	29	25	26	28	27	26	27	25

Rep = Repetition

Table 2. Inhibition zone Propolis Extract *Trigona spp* towards MRSA, VRSA

Concentration Propolis Extract *Trigona spp*	Inhibition Zone Propolis Extract *Trigona spp* (mm)									
	MRSA					VRSA				
	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
200mg/ml	8	8	8	9	9	10	11	11	11	11
400mg/ml	10	10	11	9	11	12	12	12	12	13
600mg/ml	12	13	14	13	14	13	13	13	14	14
800mg/ml	16	15	15	15	15	15	16	16	15	15
1000mg/ml	18	18	18	18	17	16	17	17	16	16

Rep = Repetition

Table 3. Inhibition Honey and Propolis Extract *Trigona spp* towards MRSA, VRSA

			Mean	SD
200mg/ml N = 5	Isolate MRSA	Propolis	8,4	0,245
		Honey	0	0
	Isolate VRSA	Propolis	10,8	0,2
		Honey	1,6	1,600
400mg/ml N = 5	Isolate MRSA	Propolis	10,2	0,374
		Honey	11,2	1,463
	Isolate VRSA	Propolis	12,2	0,200
		Honey	14	1,00
600mg/ml N = 5	Isolate MRSA	Propolis	13,2	0,374
		Honey	19,4	1,27
	Isolate VRSA	Propolis	13,4	0,245
		Honey	20,2	0,97
800mg/ml N = 5	Isolate MRSA	Propolis	15,2	0,200
		Honey	21,6	1,600
	Isolate VRSA	Propolis	15,4	0,245
		Honey	24	0,632
1000mg/ml N = 5	Isolate MRSA	Propolis	17,8	0,200
		Honey	25,2	1,158
	Isolate VRSA	Propolis	16,4	0,245
		Honey	26,6	0,51

Tabel 4. The Result Statistic Test Inhibition of Honey and Propolis Extract *Trigona spp* towards MRSA, VRSA

Subject	Propolis				Honey			
	MRSA		VRSA		MRSA		VRSA	
Kontrol	0	P value[a]	0	P value[b]	0	P value[a]	0	P value[b]
200mg/ml N=5	8,4	0,00*	10,8	0,00*	0	0,00*	1,6	0,00*
400mg/ml N=5	10,2		12,2		11,2		14	
600mg/ml N=5	13,2		13,4		19,4		20,2	
800mg/ml N=5	15,2		15,4		21,6		24	
1000mg/ml N=5	17,8		16,4		25,2		26,6	

[a] Anova Test

[b] Kruskal Wallis Test

*<0,05 there is the significant different

The antibacterial mechanism in honey according to Suganda[14] affected to a high level of Glucose and Fructose in honey, the acidity of honey and also hydrogen peroxide composition. According to Hamad[15], the formation of glucose and fructose in honey through the osmotic process can cause dehydration to bacteria cell since a lot of water comes out and in this situation, the bacteria can quickly become lysis. The high acidity level of honey with pH 3,2-4,5 can cause the bacteria cell metabolism process to become slower when the compounds that bacteria need for a living are unavailable therefore it can cause the cell lysis easily.

According to Sulaiman[16] the composition of hydrogen peroxide which is cytotoxic with the free radical formation that comes out will destruct the bacteria cell structure including the cell wall and cell membrane, this thing also can make the bacteria cell lysis so that it can decrease the bacterial growth,

The study result of Hijriah et al.[17], shows that the Minimum Inhibit Concentration (MIC) Trigona spp honey bee towards Staphylococcus aureus in concentration 37,5 mg/ml and Minimum Bactericidal Concentration (MBC) in concentration 50 mg/ml. Results of research on Trigona carbonaria honey bee towards Staphylococcus aureus with minimum bactericidal concentrations 1.2-1.8 mg/mL[18]. The study of MRSA towards honey already done by Molan P.C[19] and shows that honey has antimicrobial activity towards MRSA.

Extraction process for propolis that chosen for this study is doing maceration using organic diluents ethanol 70 mg/ml. maceration aim itself to give some time for propolis and diluents to have an interaction so that the diluents can dilute the compound inside. According to Hasan et al.[20], using ethanol 70 mg/ml better that ethanol absolute (95mg/ml) because it can dilute more active material such as flavonoid more.

Gould[21] said that some factors that affect the antibacterial potency of some material are concentration,

amount, and type of bacteria that will test. Related to factor type of bacteria that will be tested, MRSA VRSA is positive gram group. Propolis has some lower activity towards negative gram bacteria than a positive one.

This thing could be possible because the cell wall structure negative gram bacteria relatively complex consist of three-layer that is the outer layer is a polysaccharide, in the middle that is lipoprotein, and the inner layer is peptidoglycan so that antimicrobial compound will be hard to enter the cell and find the target. Other study shows propolis activity lower towards negative gram bacteria, was done by Agustina[12] what the best concentration of propolis extract from Malang to inhibit the negative gram bacteria growth (Pseudomonas aeruginosa) is 700 mg/ml while towards positive gram bacteria (Staphylococcus epidermidis) is 600 mg/ml.

The study result of Novilla et al.[22] Apis melifera propolis extract can inhibit MRSA growth in vitro. The resistivity that form is 2 mm in a concentration of 2 µg. The study from Nori E.B[23] also shows that the ethanol extraction from propolis sensitive in 2 µg. Research results, Inhibition zone of olive oil extracts of propolis on Staphylococcus aureus was higher (22.4 mm) than Ethanolic extracts and Water Extracts[24].

This research resulted in greater inhibition zone on the material honey bee Trigona spp. Research AL-Waili, N. et al., 2012 showed that the extract of propolis and honey bees have synergy in inhibiting the growth of Staphylococcus aureus[25].

CONCLUSION

The inhibition Trigona spp honey bee in a concentration 200 mg/ml, 400 mg/ml, 600 mg/ml, 800 mg/ml and 1000 mg/ml towards MRSA averagely (mm) 0; 11,2; 19,4; 21,6; 25,2; VRSA 1,6; 14; 20,2; 24; 26,6. Inhibition propolis extract Trigona spp bee in concentration 200 mg/ml, 400 mg/ml, 600 mg/ml, 800 mg/ml and 1000 mg/ml towards MRSA averagely (mm) 8,4; 10,2; 13,2; 15,2; 17,8 VRSA 10,8; 12,2; 13,4; 15,4; 16,4

Minimum concentration that will form the biggest inhibition of MRSA and VRSA towards propolis extract and Trigona spp honey bee is 1000 mg/ml.

Gratitude

This research received funding from research training of health personnel in 2015, thus conveyed appreciation for Politeknik Kesehatan Kemenkes Banjarmasin institution and stakeholders.

Ethical Clearance: Taken From *Health Research Ethics Committee* Politeknik Kesehatan Banjarmasin

Conflict of Interest: Nil

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DOI Numher: 10.5958/0976-5506.2018.01393.1

Barriers Faced by School Community in the Prevention of Smoking Initiation among Early Adolescents

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ABSTRACT

Introduction: Smoking is commonly acquired during adolescence. Most of adult smokers start smoking at a young age. Therefore, it is important to have a smoking prevention program. **Objective**: The purpose of this study is to explore the barriers experienced by a school community in preventing smoking initiation among early adolescents. **Method:** The research employed descriptive phenomenology design with 25 people as the research participants consisting of nurses, junior high school students and teachers. **Result:** The participants have made an effort to overcome smoking behavior, which consists of three themes such as preparation, implementation, and evaluation of barriers. **Conclusion:** The barriers of the smoking prevention program in the adolescence stage, including the preparation, implementation, and evaluation, are very complex. Therefore, it requires a strong commitment from teachers, students, and parents. It is necessary to provide school nurse, interactive promotion of smoke-free lifestyle, and intensive monitoring and evaluation of the smoke-free program at schools.

Keywords: *smoking prevention, health promoting school, community health, adolescents, phenomenology*

INTRODUCTION

Some research revealed that smoking is a learned behavior during adolescence.[1] Teenagers who are increasingly addicted to nicotine will find it hard to quit smoking.[2] The low social support from family has been identified as the most influential factor in the smoking initiation among them.[3] A comprehensive approach is important in the implementation of the smoking control program to address the systemic, psychosocial, and environmental factors influencing the smoking initiation.[2]

Nigeria has made efforts to reduce the high prevalence of adolescent smokers in the community such as enforcing the regulation which bans cigarette sales for children and adolescents as well as establishing a health education.[3] On the other hand, research in New Zealand indicated that there are barriers in the efforts to stop the smoking behavior among youth and adults such as the tendency of not using prevention tools, the strong relationship between smoking cigarettes and drinking alcohol, and the social benefits among teenagers.[4] In Indonesia, the program of smoking prevention and control has been developed. It is known as the smoke-free community. This community is intended to reduce the number of smokers which increases every year. However, the implementation is still not optimal. Therefore, the barriers to the implementation need to be examined. The purpose of this study is to explore the barriers experienced by the community in preventing the smoking initiation of early adolescents.

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METHOD

Employing descriptive phenomenology design, the research was conducted within the period of October 2016 to October 2017 (1 year) by the nurse team of community specialists.

The participants in this study were selected by using snowballing technique. The inclusion criteria of the

participants are teachers and nurses who act as managers of the smoke-free program at school. The researchers built trust by conducting 4 to 6 meetings. The researchers visited the school to interview the participants. Prior to data collection, the researchers explained the research objectives, benefits, and procedures to the participant. Further, the participants were asked to sign a consent form. The data were collected using through in-depth interviews. Semi-structured questions were used in the interviews. The duration of each interview ranged from 30 to 60 minutes, and there was no repetition of interviews.

The interviews were recorded by using an MP3 recorder and the results were compiled into an MP3 file. The voice data from the interviews were then transcribed using Microsoft Word. The interview transcripts were then confirmed by the participants to ensure the originality and reliability. All participants agreed with the content of the interview transcripts. Then, the transcripts were analyzed using data triangulation techniques to identify key keywords, sub-themes, and major research themes. Data saturation was obtained after the number of participants reached 25 people, consisting of nurses, junior high school students and teachers.

RESULTS

The barriers that emerge when the participants reduce smoking behaviour among adolescents can be classified into three categories: preparation, implementation, and evaluation barriers.

Preparation barriers

The preparation barriers reflect the constraints in fulfilling the prerequisites to carry out the efforts of controlling the smoking behavior of adolescents. These barriers are the difficulties of collecting basic data. The participants admitted that they did not know how to collect the data from teenage smokers at school.

"The difficulty lies in identifying the number of students who smoke" (Nurse_3).

The second barrier is the problem of human resources. They said that there is a lack of nurses available and the health volunteers are often changed.

"Not enough nurses available" (Nurse_2).

"It is a problem that the health volunteers are often changed" (Teacher_4).

The third problem in this preparation barrier is the priority of task completion. The nurses stated that the assignment was more dominant on the curative effort. Health promotion is not a priority and there is no smoke-free program.

"There has been no promotive implementation, only the curative one" (Nurse_1).

"There is no smoke-free program specifically in the Health Promoting School" (Teacher_2).

Implementation barriers

The barriers to the implementation experienced by participants are changes in the schedule of activities and the unsustainable of teachers in charge of Health Promoting School. The first obstacle is the changes in the schedule of activities, commonly related to the learning implementation and sudden schedule changes. This can hamper the implementation of the program. Identifying specific schedules for the implementation of Health Promoting school activities in junior high schools is difficult due to the establishment of the full-day school program.

"It is hard to find much spare time in a full day school" (Student_4).

"If there is a sudden agenda in school, it becomes a bit troublesome" (Nurse_2)

It is also constrained by the ineffectiveness of the implementing staff at Health Promoting School. The changes of teachers in charge of Health Promoting School, the absence of substitute teachers, and the burden of training are some of the barriers. The changes of teachers in charge of Health Promoting School and the absence of substitute teachers were reflected by these following statements:

"The teacher in- charge was changed yesterday" (Nurse_6)

"I am so occupied because there is no substitute teacher" (Nurse_5).

The changes of teachers in charge of Health Promoting School often overburdened the nurses to train them. This is felt by the nurse participants as a setback to the starting point of Health Promoting school activities.

"The work becomes more intense because I have to teach them" (Nurse_1).

The targets of activities are also important. One of the targets that are difficult to be involved in the activities to support Health Promoting School is parents. This situation can be seen from the statement of this participant:

"It is so difficult to gather the parents" (Teacher_1).

These preparation and implementation barriers have an implication for the evaluation of Health Promoting school activities.

Evaluation barriers

These barriers are in the form of activities which are not optimal in shaping a healthy behavior. Based on one participant's experience, forming a healthy behavior requires a continuous effort.

"Forming a behavior has to be in a continuous manner" (Teacher_7)

DISCUSSION

The effectiveness of smoking control efforts should be ensured through targeted implementation and involves an active cross-sectorial cooperation. The program from the WHO Framework Convention on Tobacco Control applies various programs to control smoking behaviour such as education, communication, training, and public awareness improvement.[4] Education as an effort to prevent and control smoking initiation has to be well-applied starting from a young age in an educational environment or school environment either junior high or high school level.

The results of a previous study conducted in a junior high school setting indicate that school-based smoking prevention program could improve students' knowledge of smoking and its bad effects, which also motivates them to have a better smoke-free attitude.[5] The program is universal and aimed at all students. There are other more specific programs such as mentoring and guidance designed for children who are at a greater risk of smoking, such as children who have problems in their family or experience academic difficulties.[6] The preparation in the program planning requires managers to obtain basic data related to the smoking behavior of students and data showing individuals who have greater risk factors as the target of smoking prevention and control program.

The statements from teacher and nurse participants at school reveal the barriers faced as managers of a smoking prevention program in collecting basic data on the prevalence or number of smokers. The results of a study conducted in Northern Africa show that more than half of the study groups kept smoking behaviour as a secret and hid the cigarettes from people in their environment.[7] This can be a barrier to identifying the number of students who smoke.

Nurses are also constrained by the limited number of human resources that is the number of nurses at schools. The intervention for stopping smoking behavior by a nurse at a school has been proved to be feasible and effective in reducing the number and frequency of teenage smokers in school. These adolescents need accessible services to help them quit smoking. Nurses as professionals in the school environment are equipped with trainings and skills to deal with adolescents, thus having a unique approach.[8] The number of human resources (nurses) adequately adjusted to the program objectives will facilitate the nurses in implementing the program.

Health professionals including nurses can become role models and educators in controlling smoking. Nurses are regarded as those having health knowledge and can be an example in a group. Additionally, nurses play a role as opinion builders which are required to explain the diseases or problems related to smoking, premature death, and economic burden. They also need to express their support for tobacco control efforts.[9]

The role of nurses at schools is more active in the prevention, promotion, and supportive efforts. According to Pbert (2011), school nurses can act as counselors for smokers (students) and as educators to control smoking behavior through home visits. The participants revealed that in performing their duties, nurses tend to play the curative role. The shifting of nurses' role from promotive efforts to curative efforts becomes one of the barriers to the implementation of smoking prevention and control. Nurses who do not understand their roles cannot prioritize the roles to be performed.[8]

The barriers encountered by the managers of the smoke-free program at schools not only occur in the preparation but also in the implementation stage. The statements of the teachers and nurses showed that there

were barriers such as the schedule of activities that often clashed with school programs, non-continuous cooperation between teachers and nurses, as well as the difficulty in presenting the target of activities especially the parents of the students.

In general, the barrier in cigarette control program is the strong relationship between smoking, alcohol, and social benefits among adolescents in certain groups.[10] This makes the challenge to implement the program in the community becomes harder. The school environment is inseparable from internal regulatory barriers. Some participants said that the time for implementing the program is limited due to the students' full schedule and the implementation of full-day school program. One of the challenges to become a smoke-free school is time and commitment. Schools are expected to be able to present the smoke-free education in an easy-to-understand program or activity, despite the tight academic activities. Schools often see this as a non-priority program. So, the commitment to providing time for the implementation is low.[11]

The school-based approach for preventing the smoking behavior of adolescents is considered as the most effective effort. Supportive and promotive actions are modeled in the relationships among students, teachers, parents, and even wider community. It is intended to build a strong support structure among teenagers. There are important factors, such as making mutual ownership, establishing good relationships with the environment, building confidence, thinking positively and developing social skills.[12]

The role of nurses and teachers as role models is very important for students in the school environment. They are considered as individuals having knowledge and can become role models in a certain group.[12] The difficulty to have human resources that can adapt to the curriculum of the smoke-free program and the availability of different human resources in each region are seen as constraining factors. Besides that, some schools do not understand how to gain access to the resources they need to effectively implement the smoking prevention.[11] This has been revealed by the participants who stated that one of the barriers they face is the availability of insufficient human resources and frequent replacement of program managers.

Another important component that needs to be provided in the program is effective communication. Most non-smoking school policies lack of strength and are ineffective. The lack of knowledge, low confidence, and support among students, teachers, supporting staff, and parents will negatively affect the effectiveness of the program.[13] The establishment of effective communication between managers can improve the effectiveness of the program implementation.[14] An ineffective communication between managers is also revealed by participants and is seen as a barrier to the program.

The involvement of various parties, including parents in the program, is seen as an important form of program sustainability. It is known that a teenager is more likely to become a smoker if one of the parents is a smoker. Parents have an important role in shaping the decision-making patterns of their children in relation to the development of smoking behavior. It is essential to maintain the parents/guardian involvement as part of the policy in supporting the role of schools in shaping healthy behaviors by families in local communities.[11] The lack of parental involvement in the program will contribute to the ineffectiveness of the smoke-free program. One of the participants expressed that it is difficult to maximize the parental involvement in the program implementation.

The evaluation barrier of this smoke-free program implementation was mentioned by the participants. Establishing a healthy behavior requires program sustainability. Therefore, education is an appropriate way to change individuals' behavior. In the United States, education has been proved to change individuals' behavior more quickly when the information about the dangerous risks of smoking is distributed.[12] However, the focus of a smoking prevention program is not merely on the educational stage. It requires further consideration of the ongoing control program on smoking behavior. It is important to implement a sustainable program not only in terms of education, but also in relation to research and the development of policies and interventions to prevent smoking behavior among teenagers as well as to help adolescents quit smoking.

The implementation of smoking prevention and control program among adolescents is important especially in the school setting. The implementation of school policies for preventing and controlling smoking initiationis an important effort. The barriers in the effort

to achieve optimal results in controlling adolescents' smoking behavior are quite complex including the preparation, implementation, and evaluation. Therefore, the effort requires a strong commitment from the program managers who have to support the implementation of the program in terms of human resources availability, infrastructure, and the involvement of various parties including parents.

CONCLUSION

The majority of adult smokers start smoking at an early adolescence stage. Therefore, a comprehensive approach is important for cigarette control program. The barriers to the implementation of a smoking prevention program at schools including preparation, implementation, and evaluation are very complex. The program requires a strong commitment from teachers, students, and parents. Thus, it is necessary to provide school nurse, interactive promotion media of smoke-free lifestyle, as well as intensive monitoring and evaluation in the implementation of the smoke-free school program.

Ethical Clearance: This research has obtained ethics approval from Research Ethics Committee, Nursing Faculty, University of Indonesia (Approval No.0528/UN2.F12.D/HKP.02.04/2016).

Source of Funding: We are grateful for The Ministries of Research, Technology, and Higher Education Republic of Indonesia in funding this research.

Conflict of Interest : Nil

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DOI Numher: 10.5958/0976-5506.2018.01394.3

The Behaviors of Ethical Leadership of Division Head Nurses at Advanced Hospitals Under Ministry of Public Health: A Qualitative Study

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ABSTRACT

Aim: To examine the ethical leadership behaviors among division head nurses in advanced hospitals under Ministry of Public Health.

Method: A qualitative study with Delphi technique was used to collect data. The participants consisted of 12 administrators who have obtained ethical awards or published ethical research and 17 experts on the ethical issue. The data was generated from open-ended interviews and the questionnaires related to division head nurse's ethical leadership. The content validity was 0.84. The index of item-objective congruence was 0.57 to 1.00.

Result: The behaviors of head nurses' ethical leadership included 57 items. Thirteen dimensions were established including: caring, responsibility, honesty, managing fairness, integrity, advocacy, consciousness, sacrifice, friendly interpersonal relationship, ethical communication, reinforcement, ethical decision - making, and ethical organization climate.

Conclusion: This study demonstrated behaviors related ethical leadership which will be an enable the ethical leadership training for division head nurses, and can be applied in providing guidelines to enhance the ethical leadership competencies of division head nurses.

Keywords: *Ethical leadership, Leadership behavior, Leadership, Division head nurses*

INTRODUCTION

Leadership is the behavior and characteristic that leaders expressed which leaders influence people by creating power, motivating compliance, and impaction the organization outcomes.[1] In modern society, the important competency of leadership not only has high skills of management but also ethical leadership, which are needed to achieve the organization's goal. Several studies claimed that the behaviors of ethical leadership were demonstration of normatively appropriate conduct through personal actions, and interpersonal relationships promotion of such conduct to followers through two-way communication, reinforcement, and decision- making to achieve the organization's goal.[2,3]

The division head nurses have crucial roles in the nursing organization in terms of management and delivery the policies from the nursing department to nursing units through the nursing division. Therefore the position of division head nurses requires that individuals who hold an ethic, and being a role model.[4] From a literature review during 2005-2015 revealed that the ethical leadership studies have been studies in the business and education field, such as Manyat [5] found that ethical organizational culture and ethical organizational climate were factors affecting ethical leadership of school administrators. There were only few studies in the nursing field such as an ethnography meta-analysis qualitative research by

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Makaroff et al[6] revealed that ethical leadership in nursing was being responsive to practitioners and providing support for increasing the capacity of ethical issues in the day-to-day work. Prichayudh and Oumtanee [7] studied the experience of Buddhist leadership in head nurses and found that the head nurses who applied the Buddhist path not only in their life but also integrated into their working life as a nursing administrator and taking care of nurses in the organization. Jantawong et al [8] focused on the factors of ethical decision-making behavior of head nurses; findings demonstrated that head nurses rated their decision-making behaviors at the high level, and the working environment factor significantly influenced ethical decision-making behavior of head nurses ($p < .05$). From the gaps of the previous studies, the aim of this study was to examine the ethical leadership behaviors among division head nurses in advanced hospitals under the Ministry of Public Health.

METHOD

A qualitative method with purposive sampling Delphi technique was used in this study. The participants of in-depth interview consisted of 12 nursing administrators who have obtained ethical awards or published ethical research; and 17 experts in ethical issue [9] for a Delphi technique.

Research instruments: The process of research instrument development divided into three phases:

Phase 1 Developing instrument: The researcher created interview guide based on literature review and the conceptual framework of Brown et al. [2]

Phase 2 Developing the questionnaire: The researcher developed the 59 items, five -rating scales questionnaires based on key informants. The questionnaires were approved by seven experts in the ethical field. The content validity was 0.84. The index of item-objective congruence ranged from 0.57 to 1.00.

Phase 3 Structure of the ethical leadership questionnaires: The initial contribution from the ethical experts was collected in the form of answers to questionnaires and their comments to these answers.

Data collection: The data was collected by an in-depth interview using semi - structure questionnaires from February 2017 – April 2017. The data collection was divided into three parts including; prior, during, and completion of the interview.[10]The seven semi-structured questions of in-depth interviews as following:

1. How the division of head nurses presented the ethical leadership behaviors?

2. What are the potential ethical leadership behaviors of division head nurses?

3. What are the appropriately ethical leadership behaviors of division head nurses according to social norm?

4. How is the ethical leadership of division head nurses promotion of such conduct to followers through communication to express themselves in the way of the leader?

5. How are the division head nurses to empower subordinates?

6. How the division head nurses is making decisions about ethical practice?

7. What other expressions of ethical leadership behaviors of division head nurses are there?

Data analysis: Data analysis from the interviews was analyzed by content analysis following Strauss and Corbin[11] and the data analysis of Delphi technique was as follows.[12]:

Step 1 Round One Delphi study. The researcher asked general questions to gain a broad understanding of the 17 experts view on ethical leadership. The 58 – questionnaires were collated and summarized the responses. Only one question was extracted because it was irrelevant content to ethical leadership behaviors.

Step 2 Round Two Delphi study. Based on the first round, there was no question was extracted that 57 - questionnaires with interquartile range (IQR) of ≤ 1.50.

Step 3 Final round Delphi study. Based on the results from the second round, the 17 experts confirmed the accuracy and relevancy of the panel of experts agreed with 57 ethical leadership questions.

Research Findings

The findings revealed that the ethical leadership behaviors in division head nurses consist of 13 dimensions with 57 items, the dimensional quotes as following:

Caring demonstrated by showing of kindness, concerning, taking care, and helping subordinate both working and personal life as quoted that "The division head nurses should have cared for subordinates by helping them to solve problems including health problems, family problems, or working problems."

Responsibility demonstrated by having a duty to complete a task, showing responsibility to the results even if an error occurs, and putting the right man on the right job as quoted that "The division head nurses have to have a responsibility to their tasks and their subordinate's task, not get off when the task is failed."

Honesty demonstrated by being on time, being straightforward behaviors consistent with actions, verbalization, and thinking, and no corruption as quoted that "The division head nurses have to have honesty, including no cheating working time, working on time, no hidden agendas or corruption, concerning the organization benefit, and carrying out straightforward."

Managing fairness demonstrated by equality, justification, and following the rules as quoted that "The division head nurses have to show neutral behavior, reasonable and equality such as assign subordinate for training, the division head nurse should consider the fairness."

Integrity demonstrated by being a good role model, behaving ethical behaviors both in professional and personal life, and respect the other as quoted that "Ethical leaders should be a good role model and do not have personal issue that may disturb the task."

Advocacy demonstrated by protection the others, and concerning the human right of subordinates in an appropriate way as quoted that "The division head nurses have to promote the right of a subordinate in terms of received health check-up every year, and working in the good circumstance."

Consciousness demonstrated by showing knowledge, concentrating on the present, and being consciousness all the time as quoted that "The division head nurses have to concentrate on their jobs, focus on the present and keep concentrate whether speaking or acting."

Sacrifice demonstrated devote to the job, and do not expect anything to return as quoted that "The division head nurses have to sacrifice to the job when the members of nursing teams were less than the number of patients and sometimes working on the weekend."

Friendly interpersonal relationship demonstrated by making friends with subordinates as their family, having a good relationship, and caring the feeling of subordinates as quoted that "The division head nurses have to show their respect, friendly, no harm to subordinates. Moreover, ready to develop the organization with subordinates."

Ethical communication demonstrated by giving direct communication, having reasonable, making two-way communication, having a chance for subordinates to show their opinion, and being deep listen and understand correctly as quoted that "The ethical leadership should have two-way communication by understanding clearly, speaking clearly and fact."

Reinforcement demonstrated by building motivation, and encouraging subordinates to have a chance to enhance ethical and nursing knowledge as quoted that "The reinforcement is very crucial for subordinates in term of contributing their power."

Ethical decision-making demonstrated by making a decision based on reasonable and being neutral, and doing based on evidence-based as quoted that "The division head nurses must have a decision making based on the studies, unbiased and fairness."

Ethical organizational climate demonstrated by promoting the policies to support activities in the organization, meeting and sharing the ethical knowledge with all members, having happiness in the work place as quoted that "The division head nurses have to develop the ethical policies in order to promote ethics knowledge to members, concerning about justice, and doing the right thing continuing through all members"

The Categories of Ethical Leadership Behaviors

This section demonstrated the categories of each ethical leadership behavior of division head nurses with Mean and inter-quartile range as following:

Firstly, caring was willing to help others, asking subordinates regarding problems at work and personal life, un-ignoring, and listening to subordinates (Mean=4.80, IQR = 1.00). Responsibility was showing responsibility of own works including mistakes, and assigning tasks depending on ability (Mean=4.75, IQR=0.63). Honesty was being a role model for working on time, following on a promise to subordinates, works with honesty, and

management team with transparency (Mean=4.50, IQR=0.88). Managing fairness was listening without judgment, righteousness, giving an opportunity, and considering the merit with the standard criteria (Mean=5.00, IQR=0.80). Integrity was being a good role model for works and personal life, respect individuality, and politeness (Mean =4.40, IQR=0.70). Advocacy was debating when subordinate received works that are not relate to nursing tasks, protecting subordinate when they were accuse without faults, recommendation the use of current welfare and claim advocacy for subordinates (Mean =4.00, IQR=0.75). Consciousness was thinking carefully, working with caution, focusing, controlling self-control (Mean=4.50, IQR=1.00). Sacrifice was coordinating and assisting the subordinates to perform urgent tasks in a timely manner, willing to sacrifice personal time to participate in professional activities and extraordinary activities (Mean =4.25, IQR=0.63). Interpersonal relationship was treat subordinates as a family, good relationships with subordinates, and sensitive to the expression of subordinates (Mean=4.67, IQR=1.00). Ethical communication was providing useful information, being appropriate communication, giving a chance to speak out other opinions based on reasonable ideas without argument (Mean = 4.40, IQR=0.90). Reinforcement was giving positive reinforcements, supporting subordinates to ethical advancement, being a consultant in ethical practice, coaching, promoting ethical practice and research skills (Mean=5.00, IQR=0.90). Ethical decision- making was searching information to support decision-making, clarifying decision, decisions making based on justice and evidence based (Mean=5.00, IQR=0.60). Ethical organizational climate was creating policy regarding ethical activities, setting road map concerning ethical standard of a hospital, clarifying ethical issues with subordinates, setting ethical meeting, and supporting happy workplace (Mean=4.80, IQR=1.00).

DISCUSSION

This qualitative research was conducted with Delphi technique to generate new insight of the ethical leadership behaviors of division head nurses. The findings revealed that the 13 behaviors of division head nurses' ethical leadership. The number of component discovered differs from previous studies in the service, and education context abroad. Makaroff, et al[6] found that two components of ethical nursing leadership must be responsive to practitioners and to the contextual system in which they and formal nurse leaders work, required receiving and providing support to increase the capacity to practice and discuss ethics in the day-to-day. Also Kar[14] suggestion ethical leadership had four components including values, vision, voice, and virtue, and Manyat[5] found that ethical leadership of education administration study had 10 components of honest, commitment, accountability, organizational culture, ethical organizational climate, and vision etc.

For the details of each ethical leadership behavior, **caring** behaviors were expressed by kindness, helping subordinates both in professional and personal issues were similar to the study from Brown, et al,[2] and Palsarn.[15] **Responsibility** was to responsible for their duties consistent[5,15] and the responsibility were expressed assign work to the right person similar to the study from Prichayudh and Oumtanee.[7] **Sacrifice** was similar to Thailand Nursing and Midwifery Council[16] which stated that nursing administration should have ethical behaviors which pay attention to the benefits of the organization more than his or herself. **Advocacy** referred to protection of the right of subordinates that similar to Fry and Johnston's study.[17] **Integrity** referred to being a good role model for subordinates both professional work and personal life related to Thailand Nursing and Midwifery Council[16] indicated that administrator should work with morality, virtue, and according to the expectations of society and professional ethics. **Honesty** was consistent with Brown, et al. [2,3] and the honesty behaviors including being on time, no hidden agenda at work, and no corruption.[15,18] **Managing fairness** was similar to Brown, et al [2,3] stated that the administration was managing fairness and equity.[5,7,15] **Consciousness** was similar to the study of Prichayudh and Oumtane[7] referred to being conscious of self and concentration to the present. **Ethical communication** was similar to Palsarn[15] that indicated two-way and open-minded communication. **Friendly interpersonal relationship** was relationship in consideration of subordinate's mind which was similar to Palsarn's study.[15] **Ethical decision making** referred to making rational decision making based on evidence and neutral, and **reinforcement** was positive reinforcement, reward, and recognition to subordinates; both categories were similar study by Brown, et al[2] that consistent with Brown, et al.[2] **Ethical organizational climate** was put in the Thailand Nursing and Midwifery Council policy,[16] Manyat[5] also conducted it as formulating policies, virtuous activities.[7]

CONCLUSION AND IMPLEMENTATIONS

This research study revealed the new body of knowledge concerning the ethical leadership behaviors of division head nurses consisted of 13 dimensions and 57 items. These findings can be applied in providing guidelines to enhance the ethical leadership competencies of division head nurses. The practical implications for nursing administration is that the ethical leadership instrument can be developed based on these research findings and be used as guideline for training of nursing administrators to improve ethical leadership behaviors. The further study should be the relationship model of ethical leadership of nursing administrators and the nursing organizational performance.

Source of Funding: A part of the study was supported by Christian University of Thailand in 2018.

Conflict of Interest : The authors have no conflicts of interest.

Ethical Clearance: Ethical Clearance was taken from the ethical committee of a private university in Thailand (IRB approval No 28/2560 Feb 18, 2017). We protected personal information and ethical concerns which includes informed consent and maintaining confidentiality. The participants were asked to give their permission to be part of a study. They were also assured of their right to confidentiality and anonymity.[13]

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DOI Numher: 10.5958/0976-5506.2018.01395.5

Quality of Medical Record Document Management System in Banjarmasin Islamic Hospital Installation in 2017

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ABSTRACT

Quality services not only in medical services, but also in the management of medical record documents (assembling, coding, indexing, filling, and retention) which are one indicator of the quality of hospital services. Based on the report in Banjarmasin Islamic Hospital, there were several problems in managing medical record documents which can be seen from the data in 2017, the incompleteness of medical records was found at 59.36%. Encoding (coding) medical record files still found 20% inaccuracy and 100% coding for medical treatment. The indexing activity is only carried out in 3 (three) indexes, storage or filling is still a 10% misfile. The purpose of this study was to find out the quality management system of medical record documents at Banjarmasin Islamic Hospital in 2017. The study used qualitative research on phenomena in the scope of research. Data collection techniques use the interview method and review documents available in the medical record unit. Primary data sources are obtained from the results of in-depth interviews and observations.

Keyword : *Medical record document, Hospital management, Quality of hospital service*

INTRODUCTION

The hospital is a service institution that requires good management in order to provide maximum health services. The hospital must have adequate human resources, facilities and infrastructure and be managed professionally so that the hospital can carry out its functions properly[1].

Quality services not only in medical services, but also in the implementation of medical records which are one indicator of the quality of hospital services that can be known through the completeness of filling medical records. The medical record unit is responsible for managing patient data into health information in a medical record document that is useful for decision making and can be one measure of patient satisfaction in receiving services. Medical records have a very important role therefore good and correct management will facilitate administration in improving the quality of hospital services. Banjarmasin Islamic Hospital is a private hospital with type C classification and has 105 beds, with the number of visits in 2016 as many as 5039 inpatients and 4408 outpatients. The number of visits in 2017 (up to September) inpatients were 2873 people and outpatients were 2950 people.

Based on the report in Banjarmasin Islamic Hospital there were several problems in managing medical record documents can be seen from the data in 2016 found incomplete medical records by 70% and in 2017 incomplete medical records were found at 59.36%. Encoding (coding) medical record files still found 20% inaccuracy and 100% coding for medical treatment. The indexing activities are only carried out in 3 (three) indices, namely the patient's main index card, death

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index, and disease index of the 6 indices that must be made by the indexing section. Storage or Filling still occurs 10% misfile because it does not use tracer, the loan bill is a substitute for medical record documents. Depreciation/retention of medical record documents in Banjarmasin Islamic Hospital is not carried out in accordance with the retention schedule where the sorting between active Medical Record Documents into inactive Medical Record Documents is carried out every year[2].

The research objective is to find out the aspects of input in quality management of Medical Record Documents which include Human Resources, funds, and facilities at Banjarmasin Islamic Hospital in 2017. Knowing the aspects of the Process in managing the quality of medical record documents which includes implementation (assembling, coding, indexing, and filling), and reporting at Banjarmasin Islamic Hospital in 2017. Know environmental aspects in quality management of medical record documents covering policies at Banjarmasin Islamic Hospital in 2017.

MATERIAL AND METHOD

This research is a qualitative study of phenomena that exist in the scope of research, which aims to evaluate the management system of medical record documents. Qualitative data is supported by data retrieval data using the interview method and reviewing documents available in the medical record unit.

The research subjects consisted of 8 participants: 1 Head of Medical Record, 5 medical record staff, 1 doctor, 1 room administration

FIND AND DISCUSSION

Input Management of Medical Record Document

Human Resources

The results showed that the quantity and quality of human resources in the Medical Record Installation Banjarmasin Islamic Hospital had not met the minimum standards for the management of medical record documents because the medical record document management officers were still in the educational background of Upper High School and not 4 medical records. people and only 1 person who took part in the training had lasted a long time, 3 medical record document management officers had never attended training in the medical record field because all this time the training activities that were often held were about reporting and accreditation. This is not in accordance with the Republic of Indonesia State Apparatus and Bureaucratic Reform Regulation No. 30 of 2013 on Chapter XI concerning the formation of medical record functional functional offices which states that type C hospitals have the lowest skilled diploma III (D.III) medical records. and health information as many as 30 people and experts with the lowest degree of Bachelor (S.1) / Diploma IV (D.IV) medical records and health information as many as 6 people[3].

Fund

Funding for operational management activities of Medical Record Documents is accepted in the form of forms such as medical record forms, Primary Patient Index Cards, medical record covers, papers, printers available, and other facilities.

Tool

Based on the results of the observation and supported by the results of the interview, it was found that the facilities and infrastructure of work support for the management of the Medical Record Documents were available but not appropriate. This was due to the lack of space available at the hospital for medical record document management officers so that the filling room with the officers was still one, and the facilities in the filling room were not adequate.

Process of Managing Medical Record Documents

Implementation

Assembling

The results of in-depth interviews and document observation in assembling activities in the completeness of forms, document filling and timeliness of the return of medical records found that the management had not run optimally. Where according to the Participants there are many diagnoses and doctors' signatures, especially in the medical resume section which has not been completed because the policy is in the form of Standard Operating Procedures that have not been specifically set about the implementation of assembling activities. This is consistent with the research of Fauziah (2014) which states that the impact of delays in returning Medical Record Documents causes delays in processing data for hospital reports, inpatient Medical Record Documents

not stored on document storage racks making it difficult to search documents, while for patients it affects subsequent treatment process[4].

Coding

Based on the results of in-depth interviews and observation of documents about the implementation of the coding of the disease that the implementation has not run optimally. Participants stated that they did not encode medical measures so that they affected the quality of the coding results.

From the results of the coding process research based on the informant the coding officer coded according to the diagnosis established by the doctor who examined the patient, but did not do the coding of the actions taken by the doctor to the patient. Because the coding officers did not understand how to code the actions, this was also caused by the coding officers having never included coding training in accordance with the 2013 Medical Recorder Functional Position Directive. This is in line with Indawati's (2017) study that there are no Standard Operating Procedures Code determination makes the officer feel obliged to do the coding. Usually what is missed to be coded is for outpatient disease cases[5].

Indexing

Based on the results of in-depth interviews with participants in charge of medical records as well as direct search of documents in the indexing section the types of index cards made in the medical record installation of the Banjarmasin Islamic Hospital are the indices performed by officers only 3 index types, namely the Primary Patient Index Card, disease index and index Dead. The indexes that are made will be submitted to the reporting section that will later be used to make hospital reports. Index card recording is still done manually on the available forms. This is due to the absence of computer facilities. According to the Directorate General of Medical Services Development (2006) suggested that the data tabulation process carried out computerized was easier and faster and more effective and efficient. This is supported by several informants in the medical record unit that the use of electronic medical records coding section is very helpful in finding work[6].

Filling

The filling process is decentralized which is separated between storage of outpatient medical record documents and inpatient medical record documents. The alignment system applies a Digit Filling Terminal system which is a storage system that aligns Medical Record Documents based on the sequence of medical record numbers at the last 2 digits or group digits. The form of medical record document storage is still manual, which still uses wooden shelves that cannot be moved. The process of taking the patient's medical record document is done by looking at the medical record number of the last month of visit, by not using tracer as a marker of the patient's medical record document coming out of the storage rack and when taking it if it does not mention the patient's last month of visit, it will be difficult for the officers to search, besides also if during storage does not match the last month visit this results in misfile of Medical Record Documents.

Based on operational standards, the procedure for borrowing medical records in Banjarmasin Islamic Hospital does not use tracer in carrying out the process of borrowing medical record files so that they are not in accordance with what was stated by the Ministry of Health 2006. in a storage rack by aligning medical record documents based on the sequence of medical record numbers on the 2 end group numbers[6]. This study is consistent with Anggara's (2015) study which states that the implementation of medical record document alignment at Ken Saras Ungaran Hospital, juxtaposition of medical record documents is aligned based on the sequence of medical record numbers in the final 1 digit number[7].

Reporting

Based on the results of in-depth interviews with reporting officers and review documents about the reporting process that officers must report internally to the Director of Banjarmasin Islamic Hospital in the form of hospital indicators and external reports to the City Health Office and Provincial Health Office in the form of Hospital Based Disease Surveillance reporting and reporting of Integrated Surveillance of Diseases that can be prevented by Hospital-Based Inpatient Immunization. Reporting Drug and Food Inspection Center in the form of poisoned patient case data in accordance with the existing reporting format.

In sending the report is still done manually, not using an online system because online data transmission not only collects data from the medical record installation

but also from every installation in the hospital so that the delivery of the report is constrained because the data is not all collected. According to the Law of the Republic of Indonesia Number 44 of 2009 Chapter XI concerning recording and reporting that every hospital is obliged to record and report on all hospital organizing activities in the form of Hospital Management Information Systems[8]. Implementation Guidelines and Procedures for Hospital Medical Records published by the Ministry of Health in 2006 stated that external hospital reports made in accordance with the needs of the Indonesian Ministry of Health which includes RL 1 containing basic hospital data, RL 2 contains data on patient morbidity/ mortality, RL 3 contains data hospital service activities, RL 4 contains workforce data, RL 5 contains medical equipment data and hospital performance and RL 6 contains data on hospital nosocomial infections[8].

Environmental Management Medical Record Documents

Based on the document search on the standard section of the medical record installation service at Banjarmasin Islamic Hospital, the service policy for managing Medical Record Documents includes: Medical data processing, Medical Record Storage, provisions for filling medical record files.

In the policy issued by the director of the Banjarmasin Islamic Hospital where it has included human resource policies and service policies in the form of managing Medical Record Documents that should be carried out by medical record installations and medical record document management officers, there are still those that do not comply with the policy standards. issued by the director of Banjarmasin Islamic Hospital. So that the quality control of the hospital has not been optimally implemented. This is also in line with the Hospital Implementation Manual in 2008 where medical record services are part of the hospital quality control program, therefore there must be a standard procedure to assess the quality of services and overcome problems that arise.

CONCLUSION

Input

The level of education of the management officers of the average Medical Record Document is still not appropriate and the medical record training has not been comprehensive in the new or old officers. Funding for management activities of Medical Record Documents sourced from Banjarmasin Islamic Hospital will be provided when submitting a review of funds and has been approved by the director. Supporting facilities and infrastructure have not been fulfilled properly in parts of filling units such as storage and security facilities.

Processs

The process of implementing quality management of Medical Record Documents is still found in Medical Record Documents whose returns are more than 2x24 hours, incomplete filling, coding of actions not performed by officers, only 3 types of indexes are still found misfile in storing Medical Record Documents. Internal and external reporting systems are still carried out manually where internal reports are carried out by inputting data on Ms.Exel's computerized so that it has not run optimally and for external reports directly inputting the forms already available from the Provincial/City Health Office, and forms from the Supervisory Board Medicine and Food.

Environmental

Environmental implementation has not been optimally implemented in any medical record document management activities and there are still some that have not been fulfilled.

Ethical Clearance: this study approved and received ethical clearance from the Committee of Public Health Research Ethics of Medical Faculty, Lambung Mangkurat University, Indonesia. In this study we followed the guidelines from the Committee of Public Health Committee of Public Health Research Ethics of Medical Faculty, Lambung Mangkurat University, Indonesia for etchical clearance and informed consent. The informed consent included the research tittle, purpose, participants's right, confidentiality and signature.

Source Funding: This study done by self funding from the authors.

Conflict of Interest: The authors declare that they have no conflict interest.

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DOI Numher: 10.5958/0976-5506.2018.01396.7

The Prevalence of Blood Borne Diseases in the Community (A Cross Sectional Study in the District of Semarang)

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ABSTRACT

Blood borne disease is a disease that spreads through blood contamination. Pathogenic blood-borne pathogens are pathogenic microorganisms found in human blood (such as viruses, bacteria or parasites) and are capable of causing disease in humans. Blood-borne pathogens in general are hepatitis B virus, hepatitis C virus and Human Immunodeficiency Virus (HIV). However, it is rarely known data about them in community. This study aims to determine the prevalence of some diseases that are transmitted through the blood in the community that lived at the district of Semarang. This research was descriptive observational using a cross sectional approach. HIV are tested by using the CLIA (Chemi Lumination Immuno Assay) and ELISA methods using Diasorin Murex reagents where HIV with anti HIV. HCV and HBV are tested by using the CLIA (Chemi Lumination Immuno Assay) and ELISA methods using Diasorin Murex reagents where Hepatitis B with antigen (HBsAg) and Hepatitis C with anti HCV. The research subject is the population who live in the district of Semarang for at least one year. Samples were taken by using simple random sampling method. The number of blood samples obtained from 1421 people who have filled informed consent and stated willing to be the subject of research. The results showed that the prevalence of HIV was 0.9 per 100 population, prevalence of hepatitis B was 1.9 per 100 population, and prevalence of Hepatitis C 0,6 per 100 population. There was moderate prevalence of blood borne diseases in community. There are some factors related to the transmission of blood borne diseases in the community that need to determine further.

***Keywords**: HIV, HCV, HBV, Blood borne, Prevalence*

INTRODUCTION

Blood-borne are transmitted by direct blood contact from injured skin or a mucous membrane [1]. The blood-borne pathogen is generally hepatitis B virus, hepatitis C virus and human immunodeficiency virus (HIV) [2–9]. Hepatitis B virus (HBV), hepatitis C virus (HCV), human immunodeficiency virus (HIV) still cause high burdens of disease in developing countries. For example, 184 million and 248 million individuals worldwide are chronic carriers of HCV and HBV, respectively [10–12]. Around 37 million individuals are living with HIV/ acquired immunodeficiency syndrome (AIDS) globally [13-14].

HIV is a major public health problem of the global community. According to WHO, people living with HIV are in low and middle income countries [15]. More than 240 million people worldwide are chronically infected with HBV and more than 350,000 people die each year due to HCV [16]. The prevalence of hepatitis in Indonesia infected with hepatitis virus was 1.2%[16]. The prevalence of liver cirrhosis was 0.6%. and HBV was 21.8% [16].

Blood-borne diseases can spread through organ transplants, sharing needles with others in activities such as tattoos and body piercings, blood or blood products donated as in blood transfusion activities [17–21]. Based on research conducted in eastern India, there are 44,173

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blood sample was collected, and tested HIV I and II, hepatitis B, and hepatitis C. From the test results found that 283 tested positive for HIV (0.64%), 1001 HbsAg-positive (2.27 %), And 717 positive for HCV (1.62%) [22]. While research conducted by Baha W et al. on volunteers and the community in Morocco, found seropositive HCV and HBV from 41,269 volunteers and 23,578 community [23]. In this study, found that the prevalence of anti-HCV increases and the various risk factors identified such as age, dental care, needle syringe and history of jaundice. In addition, male sex was associated with HBV infection and a history of risky sexual behavior were found to be associated with higher prevalence of hepatitis B [23].

According to Central Java Provincial Health Profile, in 2012 it was found out from 432,341 people who performed blood sampling as much as 432,148 (99.96%), 580 samples (0.13%) positive HIV.[15] Health profile data of Central Java 2012 showed the number of new cases of HIV / AIDS wass 81/110 cases and hepatitis B disease in Central Java there are 98 cases.[15]

Until 2013 the prevalence rates for hepatitis B, hepatitis C and HIV continue to be found, respectively 0.012%, 0.003% and 0.002% . The purpose of this study was to estimate the prevalence of blood-borne diseases (hepatitis B, hepatitis C and HIV) in the district of Semarang.

METHODS

Study Design and Sampling Procedure

This research was descriptive observational using cross sectional approach conducted between January-July 2017. Population of this study were someone who live in the district of Semarang at least one year. Sample was selected by using simple random sampling.

Sample calculated by the formula of minimum sample size for cross-sectional study as follow:

$$n = \frac{\left(z_{1-\alpha/2}\sqrt{2\overline{P}(1-\overline{P})} + z_{1-\beta}\sqrt{P_1(1-P_1)+P_2(1-P_2)}\right)^2}{(P_1-P_2)^2}$$

With level of significance 95%, power of study 80%, obtained minimum sample size 500 respondents.

Samples were taken by using simple random sampling method using sampling framework of house hold residence of District of Semarang. The number of blood samples obtained from 1421 people who have filled informed consent and stated willing to be the subject of research.

Instrument Development and Data Collection Procedure

Data collection was carried out in January-July 2017. In the process of collecting research data assisted by officers from the Indonesian Red Cross area of Ungaran for blood collection. Primary data obtained from interviews with respondents, helped by research assistance.

HIV are tested by using the CLIA (Chemi Lumination Immuno Assay) and ELISA methods using Diasorin Murex reagents where HIV with anti HIV. HCV and HBV are tested by using the CLIA (Chemi Lumination Immuno Assay) and ELISA methods using Diasorin Murex reagents where Hepatitis B with antigen (HBsAg) and Hepatitis C with anti HCV.

Data Processing and Analysis

Data is presented as a percentage for categorical data and mean ± standard deviation for continuous data.

RESULTS AND DISCUSSIONS

Socio-demographic characteristics

Most of respondents who participated in this study were male (56.2%) with age <35 years (65.2%) with education level is graduated from high school (45.3%) and 53.5% were married. Most respondents work as non-government employees (53.2%). The hypertension status of the respondent mostly are pre-hypertension (59.0%). All as seen in Table 1.

Table.1 Socio Demographic Characteristic of Subject (n=1421)

Charac-teristic		Freq-uency	%
Sex	Male	799	56.2
	Female	622	43.8
Marriage status	Married	760	53.5
	Single	638	44.9
	Widowed	23	1.6

Cont... **Table.1 Socio Demographic Characteristic of Subject (n=1421)**

Age	≥ 35 years	494	34.8
	< 35 years	927	65.2
Education	No formal schooling	5	0.4
	Primary school completed	28	2.0
	Less than secondary school	15	1.1
	Secondary school completed	346	24.3
	Less than high school	24	1.7
	High school completed	644	45.3
	Academy	123	8.7
	College/ university completed	236	16.6
Occupation	Government employee	90	6.3
	Non-government employee	756	53.2
	Student	377	26.5
	Soldier/police	37	2.6
	Farmer	6	0.4
	Fisherman	2	0.1
	Merchant	26	1.8
	Self employed	9	0.6
	Others	118	8.3
Hypertension status	No hypertension	395	27.8
	Pre-hypertension	839	59.0
	Hypertension grade 1	166	11.7
	Hypertension grade 2	21	1.5

Result of our study showed that the respondents who donated blood is 67.9%, who had drugs abuse 0.5%, who had history of sexual intercourse with multiple partners is 54.5%, and 0,7% was male who have sex with male. While respondents who have sex with drug users is 0.4%. There are 1.6% respondents that use permanent tattoo, and 6.1% use piercing. In addition, respondents also performed dental treatment, it is 16.1%. Respondents who had a history of surgery is 7.4%, and who get organ transplants is 0.5%. While respondents who received blood donor is 1.3%. (Table 2)

Table.2 High Risk Behavior Related with Blood Borne Disease Transmission (n=1421)

High Risk Behavior		**Frequency**	**%**
History of Blood Donor	Yes	965	67.9
	No	456	32.1
History of Received Blood Transfusion	None	6	0.4
	Yes	18	1.3
	No	1397	98.3
History of drug abuse	Yes	7	0.5
	No	1414	99.5
History of Organ Transplantation	Yes	7	0.5
	No	1414	99.5
History of Surgery	Yes	105	7.4
	No	1316	92.6
History of Dental Treatment	None	1	0.1
	Yes	229	16.1
	No	1191	83.8
Had a permanent tattoo	None	2	0.1
	Yes	23	1.6
	No	1396	98.2
Had an ear/nose/body piercing	Yes	87	6.1
	No	1334	93.9
History of multiple sex partners	Yes	775	54.5
	No	646	45.5
Had homosexual partners	Yes	4	0.7
	No	567	99.3
Had a drug users as a sex partners	Yes	2	0.4
	No	426	99.6

This study revealed that mostly respondents were male with age no more than 35, completed high school and married. They work as non-government employees with status of hypertension are pre-hypertension. If compare with the research conducted in Ghana to the blood volunteers, the results stated that most of the respondents were male 762 (94.3%) [24]. This is also in line with research from Janahi EM conducted in Bahrain

in 2000-2010 about the prevalence and risk factors of hepatitis B stated that several sociodemographic variables were significantly associated with the prevalence of hepatitis B virus infection [25]. Age was one of socio-demographic factor that related to the prevalence of hepatitis B infection. It significantly increased among the age groups 25–34 and 35–44 ($p<0.0001$) [25]. While research conducted by ministry of justice and human rights stated that 52% was graduated from senior high school and married [26]. While study conducted by Apidechkul et al in Northern Thailand reported that respondents mostly males (15,0%), nearly half (40,3%) were 30-39 years old and nearly three quarters (62,9%) were married, and most of them were employed (89,5%) [27]. Another research conducted by Peck et al reported that among HIV infected patients there are 49,0% who had prehypertension status [28]. According to Arboli et al the hypertension status among hiv infected patients related to age (adjusted hazard ratio [aHR] per 10 years: 1.34, 95% CI 1.07–1.68, p = 0.010), BMI (aHR per 5 kg/m2: 1.45, 95% CI 1.07–1.99, p = 0.018 [29]. From our study we know that respondents mostly have history of blood donors (67.9%), but most of them never receive blood transfusion (98,8%). Just a few of them had history of drug abuse (0.5%), had history transplantation (0.5%), and had history of surgery (7.5%). We found that 16.1% had history of dental treatment, 1.6% of them had permanent tattoo, and nearly 6.1% had ear/nose/body piercing. And we also found that nearly half of them (54.5%) had multiple sex partner, 0.7% had homosexual partners. Beside that they also had sexual intercourse with drug users but just a few (0.4%). If compare to research conducted by Awadalla et al in Egypt reported that respondent who had surgical treatment was 22.5%, who received blood transfusion was 7.5%, while who performed dental treatment was 74.6% [30,31]. This research also reported that respondent who have sexual relations was 8,5%, while who use tattoo was 31,3%, and who had drug abuse was 5.9% [31]. While study conducted by Apidechkul in Northern Thailand reported that 23.5% respondents had history of a blood transfusion, 0.8% were intravenous drug user, 29.8% tattooed, 64.5% had body piercing, and 6,5% were homosexual [27]. If compare to research conducted by Srigayatri et al among hiv and hepatitis c co-infection reported that respondents who had blood transfusion was 20.6%, who had history of dialysis was 2.7%, who had tattoo 52.9%. The study also reported about the sexual risk factors [32]. The result showed that respondents mostly (68.5%) was homosexual and 71.6% having sex with unprotected anal intercourse. While more than half of them (64.2%) having sex with intravenous drug user[32].

CONCLUSIONS

There was moderate prevalence of blood borne diseases in community. There are some factors related to the transmission of blood borne diseases in the community that need to determine further.

Conflict of Interest: The author reports no conflicts of interest in this work.

Acknowledgement: The authors thank to Faculty of Public Health Diponegoro University for funding this study (number: SP DIPA 22/UN7.5.1/PG/2017). The authors also thank the study participants, District Health Office of Semarang with all their Primary Health Centre for their cooperation in facilitating the study.

Ethical Clearence: Ethical clearance was obtained from Ethic Commission of Health Research, Faculty of Public Health UNDIP (112/EC/FKM/2017). All subjects signed informed consent to join the study.

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DOI Numher: 10.5958/0976-5506.2018.01397.9

Knowledge, Attitude, and Behavior of Farmers in the Use of Pesticides with Health Complaints in Cikandang Village, Cikajang Sub-District, Garut Regency 2017

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ABSTRACT

The use of pesticides in addition to provide benefits to control pests can also have the impacts both on humans and the environment. Therefore, pesticides should be used simultaneously according to the type, dose, target, manner, and time of application. Incorrect use of pesticides can lead to various health effects, both acute and chronic. This study was aimed to determine relationships between knowledge, attitude, and actions of farmers in the use of pesticides with a health complaint of farmers in the Cikandang Village, Cikajang District, Garut Regency. The study used cross sectional design. The samples involved in this research were 100 people who were pesticide sprayers in Cikandang Village, using accidental sampling method. Based on univariate results, 57% farmers had poor knowledge, 82% farmers had good attitude, and 79% farmers had bad behavior. According to bivariate analysis, it was found that behavior (OR = 4,24) had significant relationship with health complaint. These results indicated that counseling on pesticides and personal protective equipment for pesticide sprayers (PPE) was needed to avoid health complaint.

***Keywords**: Knowledge, Attitude, Behavior, Pesticide, Health complaint*

INTRODUCTION

Agricultural sector is one of the main source of Indonesian economy considering that Indonesia is an agrarian country. Based on the number of manpower according to the main employment, it can be seen that most laborers are still in agricultural sector which is 37,770,165 until August 2016[1]. To deal with the plant-disturbing organisms, the government implements several agricultural intensification policies, one of which is the use of pesticides in the eradication of pests and plant diseases[2]. Pesticides are chemical substances used to control various pests. Based on the Agricultural Census of 2013, the percentage of horticultural farm households using more chemicals is approximately 39.6% compared to other pest control methods. Excessive use of pesticides in agriculture will make production decline. In addition, the environment certainly becomes polluted and harmful to health[3].

Inappropriate use of pesticides can lead to various health effects, both acute and chronic[4]. In general, the acute effect may irritate the skin or eyes, nausea, and dizziness while the chronic effects of pesticides can affect the nervous system even death[5].

West Java Province has 27 districts/cities, one of them is Garut regency. When viewed the population, many residents in Garut working in the agricultural sector and reached 39.23% in 2014[6]. Based on the temporary figures of the complete enumeration of Agricultural Census 2013, the number of agricultural enterprises in Garut regency, as many as 269 thousand, was managed by households, as many as 30 was managed

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by agricultural enterprises incorporated by law and as many as 27 was managed by other than households and enterprises incorporated by law[7].

Cikandang village is one of the villages located in Garut Regency with a land area of 1,622,488 Ha. In Cikandang Village, there is Agricultural Technology Park (TTP). TTP is a pilot area of government as well as a provider of agricultural technology[8]. Most of the people in Cikandang Village choose agriculture as a livelihood[7].

Therefore, researchers would like to see how the knowledge, attitude, and behavior of farmers in the area around TTP in the use of pesticides with health complaints to farmers so that the research was necessary to be done in the Village Cikandang, District Cikajang, Garut regency in 2017.

METHOD

In this research, quantitative and descriptive analytic method was applied with cross sectional design. The research was conducted in Cikandang Village, Cikajang Sub-district, Garut Regency in May 2017. The population in this study was all farmers in Cikandang Village, with samples were 100 respondents. Instrument of this research was questionnaire with a list of questions related to research variables, namely demographic characteristics (age, sex, and education level), farmer knowledge about pesticide, farmer attitude in using pesticide, farmer behavior at using pesticides, and health complaint experienced after using pesticides.

Data analysis used in this research were univariate and bivariate analysis. Univariate analysis result presented on tables of frequency distribution and percentages, while bivariate analysis result presented in 2x2 table to see whether there is a correlation between two variables[9].

RESULTS

Health Complaints

Based on the table of illness complaints on farmers (table 1), it is known that farmers who experienced and did not experienced pain complaints had similar amount of pain complaints namely 50 respondents (50.0%).

Based on the table of health complaints experienced by farmers (table 2), it is known that the dominant health complaints experienced by respondents were dizziness (82%), difficulty breathing (44%), eye and skin irritation (18%), weak and tired (16%), headache (10%), And vomiting (2%).

Table 1. Picture of Farmer Health Complaint

Pain complaints	Frequency	Percentage (%)
No	50	50
Yes	50	50
Total	**100**	**100**

Table2. Distribution overview of Health Complaints of Respondents In Cikandang Village, Cikajang District, Garut Regency, 2017

Pain complaints	Frequency	Percen-tage (%)
Weakness and fatigue	8	16
Headache	5	10
Excessive sweating	3	6
Difficulty breathing	22	44
Excessive saliva	0	0
Blurry vision	0	0
Eye and skin irritation	9	18
Vomiting	1	2
Headache dizzy	41	82
Stomach upset / diarrhea	0	0
Fainting	0	0

Relationships between Farmer Knowledge with Health Complaints

Table 3 shows the analysis results of pain complaints were based on farmers' knowledge. There were 50 (50.0%) farmers experiencing pain complaints and as many as 50 (50.0%) farmers did not experience pain complaints. Of the 50 who experienced pain complaints, 21 farmers (48.8%) had good knowledge and as many as 29 farmers (50.9%) had poor knowledge. The statistical test result was obtained p value = 1,000 which means that there was no significant difference in the proportion

of pain complaints based on knowledge.

Table 3. Relationships between Farmer Knowledge with Health Complaints

Knowledge	Pain Complaints				Total		OR (95% CI)	P Value
	No		Yes					
	N	%	N	%	N	%		
Good	22	51,2	21	48,8	43	100	1,09	1,000
Not good	28	49,1	29	50,9	57	100		
Total	50	50,0	50	50,0	100	100		

Relationship between Farmers' Attitudes with Health Complaints

Based on the table 4, results of pain complaints analysis was based on farmer attitude. There were 50 farmers (50.0%) that experienced pain complaints and as many as 50 farmers (50.0%) did not experience pain complaints. Of the 50 farmers who experienced illness, 46 farmers (56.1%) had a good attitude and as many as 4 farmers (22.2%) had not a good attitude. Statistical test results were obtained p value = 0.019 which means that there were significant differences in the proportion of pain complaints based on attitude. Based statistical test results, it was obtained OR value of 0.22 which means that farmers who had less good attitude had 0.22 times chances to have pain complaints compared with farmers who had a good attitude.

Table 4. Relationship between Farmers' Attitudes with Health Complaints

Attitude	Pain complaints				Total		OR (95% CI)	P Value
	No		Yes					
	N	%	N	%	N	%		
Good	36	43,9	46	56,1	82	100	0,22	0,019
Not good	14	77,8	4	22,2	18	100		
Total	50	50,0	50	50,0	100	100		

Relationship between Farmer Behavior with Health Complaints

Table 5 shows the results of pain complaint analysis was based on farmer behavior. There were 50 farmers (50.0%) experiencing pain complaints and as many as 50 (50.0%) farmers did not experience pain complaints. Of the 50 who experienced pain complaints, 5 farmers (23.8%) had good behavior and as many as 45 farmers (57.0%) had not good behavior. Statistical test results were obtained p value = 0.014 which means there were significant differences in the proportion of pain complaints based on behavior. Based on statistical test results, it was obtained OR value of 4.24, which means that farmers who had not good behavior had 4.24 times chances to have pain complaints than farmers who had good behavior.

Table 5: Relationship between Farmers Behavior with Health Complaints

Behavior	Pain complaints				Total		OR (95% CI)	P Value
	No		Yes					
	N	%	N	%	N	%		
Good	16	76,2	5	23,8	21	100	4,24	0,014
Not good	34	43,0	45	57,0	79	100		
Total	50	50,0	50	50,0	100	100		

DISCUSSION

Farmer Health Complaint

Based on the table of health complaints experienced by farmers, it is known that most dominant health complaint experienced by farmers was a headache as many as 41 respondents (82%), and as many as 22 respondents (44%) had difficulty breathing, and no respondents experienced excessive saliva complaints, blurred vision, Stomach/diarrhea, and fainting. Of the 41 of respondents (82%) who were poisoned included in mild toxicity symptoms while the remaining 22 (44%) were included in severe poisoning symptoms.

Health complaints are a common health symptom experienced by respondents after using pesticides. Health complaints occur after using pesticides can also be caused by poor usage of pesticides. Common symptoms include weakness and fatigue, headache, excessive sweating, difficulty breathing, excessive saliva, blurred vision, eye and skin irritation, diminished pupils, vomiting, dizziness, stomach/diarrhea, and fainting. Most respondents acknowledge headaches and difficulty breathing. This may be caused by a lack of awareness of farmers in using Personal Protective Equipment like mask, so that pesticide particles can enter through the respiratory path. Three percent of the farmers also mentioned burning sensation, catarrh, stomach pain, unconsciousness, itching of eyes and body pains as side effects from pesticides application[15].

Relationship of Farmer Knowledge in Pesticide Use with Health Complaints

Knowledge is the result of knowing and occurs after people perform sensing of a particular object (Notoadmojo, 2007)[9]. Based on this research, most of the respondent have bad knowledge. Of the 50 who experienced the pain complaints as many as 21 of respondents (48.8%) had good knowledge and as many as 29 (50.9%) of respondents had a poor knowledge. Based on statistical test results, it was obtained an OR value of 1.09 which means that respondents who have less good knowledge had more 1.09 times chances to have pain complaints compared with respondents who have good knowledge.

This result is in accordance with research conducted by Sankoh et al. (2016). Most farmers have less knowledge about safe handling of pesticides or as much as 71% because they have never received any training related to the use of pesticides. Respondents considered that by using pesticides the results will be quickly visible. With the expected quick results, the respondents will think that they will achieve big profits. The lack of knowledge of the respondents about pesticides can certainly be bad for health. It is important to provide information to farmers who mostly have a low level of education in order not to experience poisoning or polluting the environment.

Relationship between Farmers' Attitudes in the Use of Pesticides with Health Complaints

Of the 50 farmers who experienced pain complaint, as many as 46 respondents (56.1%) had a good attitude and as many as 4 (22.2%) respondents had a bad attitude. Statistical test results were obtained p value = 0.019 which means there were significant differences in the proportion of pain complaints based on attitude. A good attitude in the use of pesticides itself means that respondents a tendency to use pesticides in accordance

with the correct guidelines.

This research is also in line with research conducted by Jin, Wang, He, and Gong (2016). It was stated that nearly all farmers interviewed (98%) believed that it is important to use or apply pesticides in a correct and scientific way [14].

After conducting interviews with the respondents, there found some respondents who use pesticides from mixing pesticides to dispose of pesticides in accordance with his personal experience and not in accordance with the correct instructions about the use of pesticides. Poor respondents' attitudes can cause health problems such as poisoning, on the contrary, a good attitude in the use of pesticides can reduce the entry of pesticides into the body so as not to have health complaints.

Relationship between Farmer Behavior in the Use of Pesticides with Health Complaints

Of the 50 farmers who experienced pain complaint, as many as 5 respondents (23.8%) had good behavior and as many as 45 farmers (57.0%) had bad behavior. Based on the results of statistical tests, it was obtained an OR value of 4.24, which means that farmers who have bad behavior had 4.24 times chances to have pain complaints than farmers who have good behavior. Other research done in Indonesia by Minaka, Sawitri, and Wirawan (2016) also found that 54,1% of the farmers had bad behavior albeit having good knowledge[13].

Of the 100 respondents, only 1 of them were buying pesticides in the stall. The brands of pesticides used by farmers in Cikandang Village are Dhitan, Bioxan, Daconil, Demolish, Stharmex. In addition, 41 (41%) of respondents still keep pesticides in the house.

Based on the results of observations and interviews found that the attitude of respondents who have been good in the use of pesticides was not in line with the behavior, such as the use of Personal Protective Equipment (PPE). After observation, respondents only wear long sleeves, trousers, boots, hats, and only a few respondents use masks. The lack of PPE that is owned and used can affect one's health.

In addition, the behavior of respondents in obtaining information about how to mix pesticides comes from many colleagues and their own experience, not from labels and field extension. Of the 100 respondents, 51 (51%) of the respondents mixed pesticides by not reading the labels and those reading the labels were only 49 (49%) respondents. This indicates that farmers have not been informed about the use of pesticides. Respondents assumed that with the length of work as spray farmers they were already familiar with the pesticide dosage so they did not need to read the label on the packaging.

Respondents used to mix 3-4 types of pesticides in one spray with as many as 93 (93%) respondents mixing pesticides. The reason for mixing pesticides is to increase the power to control pests. They did not read packaging labels and are more confident with personal experience during work as a sprayer. In addition, there are still many farmers who estimate the dosage and inquire with the working friend as many as 53 (53%) of respondents and who follow the instructions label or local officials only 47 (47%) respondents.

Respondents who sprayed pesticides by moving backwards were only 3 (3%) respondents. Respondents who continue to spray when the wind blew hard were 79 (79%) respondents, while respondents who sprayed in a way back and forth as many as 69 (69%) respondents. Respondents who does not use the full PPD can experiencing pesticides poisoning because pesticide particles might enter the body freely. That is why the PPE is important especially for sprayer-farmers.

CONCLUSIONS

Health complaints that experienced by respondents were difficulty breathing (44%), eye and skin irritation (18%), weakness and fatigue (16%), headache (10%), and vomiting (2%). There is correlation between attitude with health complaint (P value = 0,019 and OR = 0,22), and there is correlation between respondent behavior with health complaint (P value = 0,014 and OR = 4,24). Poor respondent behavior had 4.24 times greater chance of health complaints than that of good. Farmers and communities need to read labels and instructions before using pesticides, as well as they need tu wear Personal Protective Equipment (PPE).

Acknowledgement: This research could be conducted very well by funding from PUPT, Indonesia.

Etchical Approval: The study was approved by the Universitas Indonesia Faculty of Public Health Institutional Review Board (IRB) with the letter number of 158/UN2.F10/PPM.00.02/2017.

Competing Interest: There is no competing interest or conflict of interest on this research article

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DOI Numher: 10.5958/0976-5506.2018.01398.0

Service Excellence: Strategies for Healthcare and Nursing Services

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ABSTRACT

In the digital era, healthcare industry is evolved under conditions of intense competition in approaching health prevention, protection, and promotion. Healthcare organization especially nursing organization should adapt strategic planning of excellence (1) promotion and prevention excellence; (2) service excellence; (3) people excellence; and (4) governance excellence. Therefore, healthcare providers and nurses are challenged to always ensure better patient experience, winning patients' satisfaction, and loyalty and remain competitive advantages.

Achieving service excellence is a potential factor for gaining competitive advantages in today's healthcare industry. Sustained competitive advantage is the direct result of the value differential which a marked difference in clinical quality, service quality or price between other hospital services. As an executive, the job is to set a service strategy and enable staff to both innovate and continuously improve services. To achieve a service excellence, the healthcare and nursing organizations should start with components as followings; (1) creating and sustaining a culture of service excellence focusing on the six principles of service excellence, (2) leadership function and leadership roles for achieving service excellence, (3) strategies for achieving service excellence in healthcare with service-staff-system strategy, and (4) implementation of healthcare and nursing service strategies

In conclusion, patients nowadays are systematically becoming aware of the diversity of their choices, being increasingly involved in making better healthcare choices, and, so, more and more innovative services are introduced. The all components of service product, service setting and service delivery system is not complete without patients. Achieving service excellence should be started with patient focus and everything ends with the patient as well.

Keywords: *Service Excellence, Healthcare Strategy, Nursing Service Strategy*

INTRODUCTION

In healthcare, the primary goal is to achieve a positive clinical outcome. The rest of the patient experience; however, often receives much less attention, to the detriment of all concern[1]. Managing the total healthcare experience means ensuring that every component of care including the physical environment, organizational culture, healthcare clinician and staff behaviors, patient and healthcare team interpersonal relationship, communication system administrative policies, clinical protocol and standard of operation[1]. The unique and multilayered players (e.g. physicians, nurses, regulatory agencies) in healthcare industry have cause healthcare organizations to pay less attention to their primary patients. However, medical or nursing managers have focused on reaching patients' clinical needs, not their wants, needs,

In the present, the hospital seeks patient satisfaction ratings of 9 or 10 out of 10 by exceeding expectations for patient care delivery to assure maximum medicare reimbursement. Although congregations are not driven by the same imposed requirements for financial gain,

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the concept of service excellence is transferable to the setting[2]. Nursing strategic plans were carefully designed and specifically structured to lead to successful implementation of a shared leadership and a new nursing culture of excellence. Nursing excellence was further verified by achieving outstanding results in patient, physician, and nurse satisfaction scores and nurse retention[3].

Definitions of Service Excellence

Service excellence is both obtrusive and elusive. Service excellence in healthcare is difficult to define and better described as an "I know when I receive it, or perhaps more frequently, I know when I have not[4]. According to Robert Johnson (Institute of Customer Service), service excellence has four key elements: (1) delivering the promise of quality healthcare, (2) providing a personal touch, (3) doing a more than adequate job and (4) resolving problems well[4].

In order to achieve these elements, healthcare institutions, in particular, must be concerned with reducing the drivers of dissatisfaction, and providing exceptional healthcare[5]. Schneider and Bowen demonstrated that "evidence indicates that satisfying customer is not enough to retain them because even satisfied customers defect at a high rate in many industries" satisfaction is a judgment. Delight is 'an expression of very high satisfaction'; delight is a result of excellent service that exceeds expectations. "Exceeding expectations" implies that organizations have continually to do more in order to deliver excellent service and delight their customers[6]. In conclusion, service excellence is the exceeding expectations compliance and anticipation exceeding standards accommodating and flexible subject matter expert, focusing on purpose, and customer loyalty[7].

Creating and Sustaining a Culture of Service Excellence

Establishing a culture of service excellence can be a catalyst for the service excellence strategy to move forward. Once service excellence is recognized as a valuable tool to improve the delivery of healthcare and nursing services, the next step is to assist each unit in finding methods to pursue nursing service excellence. To create and sustain a culture of excellence, the six principles of service excellence is a comprehensive approach to effectively improving the work environment, employee performance and the nursing service experience for patients all in one initiative[7].

Figure1: Creating & Sustaining a Culture of Excellence[7]

Principle 1: Vision and mission statement

The vision/ mission that are clear and simple and that every employee top-down within organization knows own and energizes. The vision statement should articulate for employee what the organization wants to be in 20 years. On the other hand a mission statement should clarify for employee who we are as an organization what is our purpose what legacy do we want to leave or even how we plan to achieve the vision and mission now.

Principle 2: Organization objective

The organization objective should be 3-4 primary key objectives and what that do for employee is it articulate how we do and what are our goals. The objectives should achieve the vision and mission; and employee understand exactly how their role and job performance.

Principle 3: Service standard

Service standard articulates for employees the actions and behaviors that they must demonstrate to bring the organization objectives the vision and mission to life every day.

Principle 4: Intervention and learning strategy

Intervention and learning strategy are those things that new employee orientation problem resolution grooming standards telephone etiquette those processes that directly impact the customer and what we do is help organizations determine where their gaps and then put interventions to close some of those gaps. The learning strategy is the strategic plan that maps out when we implement them throughout the organization's consistently.

Principle 5: Organizational alignment

Organizational alignment looks at what is the communication strategy such as newsletters internet, social media whatever using to keep vision, mission, service standard alive re-energized, refocused, reinforced, re-emphasize. Organizational alignment is the strategy that helps us to put mechanism to repeat vision, mission and service standard every single day.

Principle 6: Measurement and leadership accountability

Measurement and leadership accountability is the key indicators measuring to determine and track how successful. Leadership accountability is going through all this laborious work creating and vision, mission, organizational objective, service standard that there are articulated and everyone understand them having processes in place to make them repetitious and consistent. Leadership accountability is addressing what mechanism the organization has in place to hold leader accountable for driving excellence.

Leadership function and leadership roles for achieving service excellence

To establish a culture of service excellence, the organization has to build leadership and develop a service excellence team. Leadership drives an organization; excellent leaders set the standard for everybody with their words and actions. At the same time, they bring out the best in people and encourage individual strengths. Commitment to service excellence by nursing manager should (1) create and instill a service excellence vision and an organizational climate conducive to the goals and principles of service excellence (2) ensure employees are trained and developed to give excellent service (3) facilitate and celebrate progress in service excellence goals (4) promote teamwork by building commitment to attaining the end-results and (5) communicate the success of service excellence to other departments, ministries, governments and to patients[7].

A great nursing manager is defined as someone who informs employees of what is expected of them; provides the necessary tools for works; allows employee to do what they do the best; recognizes, praises; cares about employee's life; and encourages the professional growth and development of every employee[1]. To be a great nursing manager for achieving service excellence, leadership functions should be as followings; (1) managing and overseeing division operations, (2) operating within budget, (3) hiring and managing employees, (4) attending meetings, (5) controlling costs and waste, (6) maintaining and improving worker productivity, (7) Handling internal/external conflict, (8) completing reports, and (9) maintaining safe work.

Also, leadership roles should be (1) inspiring, leading and motivating employees to achieve greater goals, (2) setting the vision and mission for the department or division, (3) being a mentor, coach and role model, (4) ensuring the team is aligned around a common purpose, (5) providing the direction, praise and recognition for a job well done, and (6) developing the skill and talent of nursing teams[8].

Strategies in healthcare and nursing services for achieving service excellence

The strategies for achieving service excellence in healthcare and nursing services can be divided into three parts of strategies as followings;

Part I: The Service Strategy

The service strategy is the set of plans for fulfilling the organization's mission and vision, responding its values and culture, and reaching its goal. All services efforts are based on this strategy; the service strategies are including the three components of service product-setting and delivery system, the strategic planning process, environment assessment, quantitative and qualitative forecasting tools, evidence-based design and the healing environment, the customer-focused culture[1].

Part II: The Service staff

Staffing is the human resources activities that yield the personnel who develop, implement, improve and monitor the strategy including job analysis; recruitment, selection, and retention; leader and staff development; employee empowerment, motivation, and rewards; coproduction of healthcare and nursing services[1].

Part III: The Service system

System is referred to the processes, policies, standards, and other practices that support the strategy and the staff. The service system strategies are including health information system, blueprinting, fishbone analysis, and program evaluation reviews; waiting time and psychology of waiting; measurement and feedback methods; preventing service failure; and service excellence model[1].

Implementation of healthcare and nursing service strategies

The implementation of implementation in healthcare and nursing services for achieving service excellence that it is compound of three parts in 15 attributes as following;

Part I: The Service Strategy[1]

Customer satisfaction as competitive advantage: Identifying and managing all aspect of the healthcare experience. Focusing on the customer, treating customers like guests. It is consists of four strategy activities which are (1) identifying the needs, wants, and expectations of patients, (2) creating a plan to overcome and reverse negative patient perceptions, (3) providing links of organization's website to healthcare resources and related information , and (4) "Think retail" when developing service features.

The customer as a guest: Meeting or exceeding the quality and value that customer expect. It is consists of four strategy activities as (1) treat each patient like a guest, (2) study patients by research related to patients' definition of quality and value, (3) designing memorable services, and (4) calculating the tangible and intangible cost of services.

Enhancing customer service through planning: Identifying and focusing on the key drivers of customer satisfaction in strategic planning. There are (1) performing an internal and external environment assessment, (2) considering the customer's perception of quality and value when creating services, (3) developing action plans to implement the service strategy, and communicate those plans to all internal stakeholder, and (4) conducting alignment audit to ensure that all critical activities are in sync with the mission.

Creating a Healing Environment: Exceeding customer expectations regarding the healthcare setting in both reception and patient care areas. There are (1) envisioning and create the environment from the patient's not the organization's point of view, (2) pay equal attention to public area, (3) identifying nursing service system problems and improvements related to the positive practice environment, and (4) creating en evidence-based healing environment to convey and advance the organization safety, quality improvement, and patient satisfaction agenda.

Developing a culture of customer service: Defining and building a culture committed to providing superb service for all parts of the healthcare experience. There are (1) integrating beliefs and values into every aspect of nursing staff, (2) developing customer-focus beliefs and values, (3) creating reward systems and training programs, (4) adapting successful elements from other organizational cultures, (5) interacting with other nursing/ healthcare networks, and (6) sharing stories of organizational legends and heroes.

Part II: The Service staff[1]

Staffing for customer service: Finding and hiring clinical competent people who love to serve. The strategy activities are (1) empowering nursing staff to serve, (2) performing a thorough job analysis before undertaking the recruitment process, (3) assessing the attitudes and values of job candidates, not just their job skills, and (4) involving the entire team in the selection process.

Customer service training: Train employees, and then train them some more. There are (1) teaching employees in creative problem-solving techniques, (2) aware of training outcomes from patient expectation, (3) developing both leaders and staff for the organization's future, and (4) making training and development in customer service an ongoing process.

Motivation and Empowerment: Motivating, empowering, and rewarding employee for achieving customer service goals. The strategy activities are (1) set clear, measurable standard that define expectations for job performance in all areas, (2) walk the talk as employee responds, (3) making all tasks and goals measurable, (4) pay attention to communication, (5) being fair, ethical, and equitable, (6) focusing on frequent, ongoing feedback geared toward improved job performance, (7) reward desired behaviors and identifies the types of rewards most desired, and (9) giving public reinforcement.

Involving the patient and family in coproduction: Empower patients and their families to help meet their own healthcare need. The strategy activities are (1) training nurses to coach, monitor, and supervise customers, (2) restructuring patient rooms to encourage family and friends to visit, and (3) motivating patients who derive value and quality from participation to coproduce.

Part III: The Service system[1]

Communicating information internally and externally: Keeping the patient, family, and employee informed. The strategy activities are (1) learning the unique informational needs of each internal and customer and satisfy them, (2) making information available in a format that each customer expects ability to use, and feasibility, (3) put organizational information online but protect confident data, and (4) ensuring the information system generates and feeds back information for those who need it.

Delivering the service: Providing a seamless healthcare experience. There are (1) checking the system failure and service problem, (2) identifying and eliminate current policies, procedures, and rules that may impede customer services, (3) monitoring and maintain the quality of the service delivery system, and (4) designating the nursing staff position and responsibilities at each service.

Waiting for healthcare service: Managing all parts of the wait. The strategy activities are (1) managing the wait, do not just them happen, (2) knowing how long customer is willing to wait without becoming dissatisfied, (3) using queuing or waiting–line models, and creating and implement performance standards for waiting times.

Measuring the quality of the healthcare experience: Measuring the important things, and then pursue the superb healthcare experience relentlessly. There are (1) focusing on the quality and outcomes of both clinical service and customer service, (2) using the combination of qualitative and quantitative method for measuring customer satisfaction, and (3) assessing the quality of service for both internal and external patients.

Fixing healthcare service failure: Eliminate all sources of disappointment positively and quickly. There are (1) realize that service-failure prevention, (2) train and empower nursing staff to find and fix problems, (3) train nursing staff to listen to dissatisfied- customers with empathy, then records the service problem and its solution, (4) address the root cause of service failure.

Leading the way to healthcare service excellence: Leading others to provide a superb healthcare experience. The strategy activities are (1) starting with customer-both internal patients and internal staff members, (2) articulating a vision, transcending to nursing staff, (4) build a strong customer service culture, (5) organizing staff to be trained and reward, (6) ensuring the job is fun, fair, and interesting to help employees provide superb experience, and (7) establishing a standard of performance.

CONCLUSION

Service excellence is a key factor for gaining competitive advantages in healthcare industry. The healthcare and nursing leaders blend the healthcare or nursing service strategy, staff and systems so everyone know they are supposed to concentrate on patients and other customers. Only when these components are all in place can the leader be effective in enabling and empowering employees. Only then can empowered employees provide the outstanding healthcare and nursing services that fulfill the organizational vision of providing remarkable service that exceeds patient expectations.

Source of Funding: Christian University of Thailand supported a part of publication fee.

Conflict of Interest: The author has no conflict of interest.

Ethical Clearance: Not required

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DOI Numher: 10.5958/0976-5506.2018.01399.2

Changing Rural Communities Behavior Towards Safe Water and Improved Sanitation in Indonesia

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ABSTRACT

Objective: To understand rural communities' perception and attitudes on safe water and sanitation facilities. Additionally, provide evidence to showcase the impact access to safe water and improved sanitation facilities can have on rural communities.

Design: A case study with mix-method data collection through household surveys and focus group discussions (FGDs).

Setting: Two villages in Agam district, West Sumatera province, Indonesia, with contrasted performance on access to water and sanitation.

Participants: 227 household respondents, 7 FGDs and 15 in-depth interview informants.

Main outcome measures: To gain insight on respondents' perception and attitudes toward safe water and improved sanitation, to design stages of behavioral change.

Results: Access to safe water and improved sanitation is not yet needed by rural communities due to insufficient information, nature condition, limited options for facilities, lack of reliable health workers and unclear policy. Behavioral change amongst community members requires more than awareness raising, it also needs planned activities, supplies and policy support with shared ownership between community and government.

Conclusions: Sanitarians are key stakeholders in rural water and sanitation. They hold important leadership in gradually changing rural people's behavior towards safe water and improved sanitation.

Keywords: *sanitarian, behavior change, sustainability, environmental health, evidence-based.*

INTRODUCTION

Despite progressive access to rural water and sanitation (WASH), quality of facilities and services is very poor. The WHO/UNICEF's Joint Monitoring Program 2017 recorded that currently no rural communities in Indonesia have access to safely managed WASH, 81% and 57% have access to basic service to water and sanitation.[1] By 2019, The Government of Indonesia (GoI) is determined to ensure the provision of 85% access to safe water and improved sanitation (SWIS) and 15% access to basic WASH to all population.[2] The GoI has set up a standard service for safe water which includes at least 60 liters/head/day,[3] water quality that meets physical, biological, chemical and radioactive standards,[4] is accessible 24 hours/day, and tariffs that do

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not exceed 4% of customer's income.[5] The GoI has also set up an institutional mechanism to ensure provision of SWIS by local government and community.[6] However, there are unclear procedures and insufficient resources, including availability of sanitarians, health workers responsible for water quality, to ensure application of this standard.[7]

Data on the quality of WASH in rural Indonesia is insufficient. Statistics Indonesia conducted the first water quality survey in 2015, covering 940 households in Yogyakarta. It found that only 8.5% had access to safe water and 45.5% had access to improved latrines.[8] Asian Development Bank study in 2016 found that only 6% of households with on-site systems had ever emptied their septic tanks due to poor construction.[9] The lack of SWIS facilities lead to environmental-based diseases such as diarrhea, typhoid, and worms. It is important to provide more than just availability but quality access.

Communities, village government and sanitarians are critical to the provision of quality WASH in rural areas. In contrast with urban areas, delivery of rural WASH services is conducted by community and supported by the government through a number of programs such as Community-Based Water Supply and Sanitation Program (Pamsimas) and Community-based Total Sanitation (STBM). Sanitarians, working at community health center (puskesmas) oversee some villages and are responsible to observe, monitor, and empower communities to increase environmental quality, including WASH.[10]

Little is known about Indonesian rural people's perception and attitude towards SWIS. This study aims to capture their perceptions and attitudes, and to provide insight into design stages and options to create rural communities demand toward sustainable SWIS services.

METHOD

A case study was conducted in two villages with contrasting performances in WASH services provided by a Community-Based Organization namely BPSPAMS in Agam district. Both villages received a Pamsimas project, the Government's main rural water program in Indonesia which was implemented in 2008, aimed at targeting 27,000 villages by 2020.

A high performance village was Silayang. In 2008, it was devastated by an earthquake that destroyed its irrigation facilities, which it heavily relied on for communities' livelihoods. By 2011, the village achieved universal access to SWIS and Open Defecation Free status. It was located under puskesmas Lubuk Basung and has one sanitarian overseeing 47,000 people.

A poor performance village was Gumarang-1. Although there was no water scarcity, people relied on unsafe sources such as irrigation, rain water and unprotected wells. Piped water through BPSPAMS lasted about a year and stopped due to a number of social issues. There was insufficient data on access to improved sanitation, however the head of the puskesmas estimated less than 20% of population defecated in improved facilities in June 2017. The puskesmas oversees 18,000 people. The sanitarian position has been vacant since 2008 and the role was undertaken by a midwife.

Community perceptions and attitudes were collected through a random household survey. Using the Slovin method with 95% significant rate, there were 130 respondents in Silayang and 97 respondents in Gumarang-1. To enrich survey data, seven FGDs and 15 in-depth interviews were conducted. SPPS and NVIVO software were used for data analysis. Ethics approval was granted by the School of Environmental Science, Universitas Indonesia.

FINDINGS

Table-1 outlines respondents' demographic information and access to WASH. All people in Silayang already have access to SWIS while less than half in Gumarang-1 have it. The FGDs found that Silayang's community were more confident in the quality of their water compared to Gumarang-1's. "It is piped directly from the mountain, looks clean and no one has ever been sick of drinking it". "Off course it is not safe, looks turbid, we take it from irrigation. At least no one get sick".

Table 1. Demographic and Access to WASH in Case Study Areas

Indicator	Description	Silayang	Gumarang-1
Demography			
Population	People Households	1,068 339	640 128
Sex (people)	Male (%)	19%	49%
	Female (%)	81%	51%
Education	Elementary: 6 years or less (%)	65%	43%
Income <69 USD	Average/month (1 USD= IDR 14.500)	85%	51%
Disaster	Water scarcity	Yes	No
Health worker	Sanitarian	Yes	No
	Village midwife	Yes	Yes
Water supply (in person, n=227)			
Safe source	Piped/BPSPAMS	128	0
	Ground well	1	42
Unsafe source	River, rain, or spring	0	18
	Bottled	1	37
Time	Water flows to home (0 minute)	125	70
	Dispatch water (return minute)	5	7
Quantity	Average (liter/head)	100	254
	Cannot estimate	124	56
Quality	No odor, no color	128	94
Solid and liquid waste	Waste disposal less than 10 meter from water source	5	79
cost/monthly (USD)	Average (1 USD= IDR 14.500)	1-2 USD	2-3 USD
Quality checking	Ever asking sanitarian, midwife or BPSPAMS	10	1
Sanitation (in person, n=227)			
Improved facility	Own latrine with septic tank	123	12
Unimproved facility	Own latrine without septic tank	4	55
	Shared latrine	2	6
	Public latrine and open	1	24
Pit emptying	Ever empty	0	0

Source: Author, 2018

Based on laboratory testing from four sites including, water sources and houses, water in both villages did not met microbiology standards of 0 E.*coli*, however met most physical and chemical standards, except turbidity and pH in Gumarang-1. Respondents had local practice to filter and boil the water before drinking it except bottled water because they perceived it as safe, simple and economic.

The market for bottled water is rapidly growing. In 2010, nearly 30% of Indonesians used it as a primary source of drinking water and 4% living in rural areas,[11] including 40% of respondents in Gumarang-1. There is insufficient education and action taken by health workers provided to communities and water vendors. The head of Gumarang-1 Puskesmas stated that they found bottled water sold in their areas did not meet standards, "but, we are unauthorized to take action.

Hence, we only encourage the water vendor to increase the quality of their water". Department of Health is responsible for checking the water quality however actions toward business providers is the responsibility of trade department.

Some people in Silayang noticed that sanitarians came twice a year to take water samples. These results were announced during the BPSPAMS customers' meeting. In Gumarang, due to the absence of a sanitarian, neither testing nor water treatment were conducted. The midwife had insufficient knowledge and skill on environmental health to undertake this role.

The Pamsimas project was started by triggering communities demand and behavior for improved latrines through STBM approach led by a sanitarian. In Silayang, 70% respondents (n=92) knew about STBM triggering and 73% (n=67) participated in it. In Gumarang, 88% respondents (n=85) knew about it however, only 48% (n=41) ever participated. Due to vacant sanitarian, STBM triggering was led by Pamsimas consultant.

DISCUSSION

Perception and Attitude on Sustainable Safe Water and Improved Sanitation

Using Principal Component Analysis (PCA), the study determines factors which build and influence perception and attitude on SWIS as seen in Table-2 and Table-3. There were 14 and 17 questions to measure perception and attitude respectively.

Table 2. Perception on Safe Water and Improved Sanitation

Perception **KMO of sampling adequacy: .747** **Bartlett test of sphericity: 661.739**	**Initial Eigenvalues**			**Component Transformation Matrix**		
Component	Total	% of Variance	Cumulative %	1	2	3
Availability and delivery of access.	3.490	26.848	26.848	.959	.267	.097
Financing and personnel	1.645	12.651	39.500	.191	-.857	.478
Expensive and unreliable service for improved latrines	1.341	10.314	49.814	-.211	.440	.873

Source: Author, 2018

Table 3 Attitude on Safe Water and Improved Sanitation

Attitude **KMO of sampling adequacy: .892** **Bartlett test of sphericity: 1689.179**	**Initial Eigenvalues**			**Component Transformation Matrix**		
Component	Total	% of Variance	Cumulative %	1	2	3
Citizen engagement in provision of water and sanitation triggering	5.959	37.244	37.244	.888	-.460	.012
Community contribution in BPSPAMS operation and sanitation behavior	2.558	15.986	53.230	.451	.874	.181
Citizen engagement in BPSPAMS' planning	1.040	6.499	59.729	-.094	-.155	.983

Source: Author, 2018

Respondents perceive SWIS as a facility they can access every day. Safe water should be delivered by an organization to ensure the service's standards and accountability while improved sanitation requires septic tank. Respondents perceive improved sanitation as an expensive facility with unreliable services that do not directly benefit their health. Gumarang-1 people thought that improved sanitation was not ecologically friendly. "There is a cycle in ecosystem, we feed fish with our dirt and they feed us. It is stupid and wasteful to buy fish pellet".

The PCA categorized attitudes into three components: citizen engagement in water provision and sanitation triggering, community contribution for BPSPAMS' operation and construction of improved latrines and citizen engagement in BPSPAMS' planning. Citizen engagement is a binding commitment and shared responsibility between citizen and government.[12] There are differing attitudes along service delivery priorities. Silayang people emphasize BPSPAMS' operation and expansion, while Gumarang-1 focus on establishment of BPSPMS and sanitation triggering. Community knowledge on improved sanitation is quite high but motives to construct improved latrines are varied. Instead of becoming healthy, motive for people in Silayang was to get BPSPAMS' water and to attract their urban family to visit home. West Sumatera or Minang tribe people adopt a migration culture (*merantau*) and do not go back home frequently.

Experience influences people's perception and attitude. In many rural settings they are dominantly influenced by nature.[13,14,15] Following earthquakes and water scarcity, experience, perception and attitude of the Silayang people was increasingly influenced by nature. With local conflict on service delivery, Gumarang-1 people's perception and attitude was influenced by accountability of the service provider.

Creating awareness and convincing rural communities on the need for sustainable safe water and improved sanitation

Access to SWIS is not yet needed by rural communities because of insufficient information of SWIS, limited options to SWIS facilities, lack of reliable health workers and ineffective policy at the village level. Encouraging community members to demand a sustainable SWIS service requires a stage of behavior change. Adjusted behavioral change model developed by Prochaska and Diclemente[16] and World Bank[17], the stage to convince people of SWIS's importance appears as figure -1.

Figure 1: Stages to create needs on safe water and improved sanitation

Source: Author, 2018

In short, steps sanitarians can take to convince rural people include:

- Provide simple and emotive information on SWIS, such as economic security and the relation between SWIS and environmental health.
- Engage village citizens in awareness raising activities to create ownership and to determine shared responsibility to sustain SWIS.

- Institutionalize actions to maintain new behavior through sanitarians, village midwives, BSPAMS and formalize them into village and puskesmas policy.
- Encourage local government to provide better access and affordable supplies to SWIS.

CONCLUSION

Quality access to SWIS is essential to prevent environmental diseases contamination and improved quality of life. Communities and government play critical roles to ensure sustainability of SWIS which is determined by people's behavior and nature condition. Convincing rural people on the need for sustainable SWIS requires more than just raising awareness. People need to understand what SWIS is and why they need it, both cognitively and affectively. Reliable and affordable supplies and practical policy for SWIS are needed to respond to their demand for new behavior. Sanitarians are key stakeholders in rural WASH services. Their existence, skill and engagement should be ensured and continually strengthened.

This study adds on identification of rural communities' perceptions and attitudes on SWIS, critical role of sanitarian in collaboration with community and village government to sustain SWIS delivered through an accountable provider such as BPSPAM and insight into design and options to convince rural communities that sustainable service of SWIS is essential, for human and nature prosperity.

Conflict of Interest: None to declare.

Source of Funding : The writing of this article is supported by PITTA grant of Universitas Indonesia.

Ethical Clearance : The ethical clearance of this research is granted by the School of Environmental Science, Universitas Indonesia.

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DOI Numher: 10.5958/0976-5506.2018.01400.6

Leptin and Cortisol: Relationships with Metabolic Syndrome in Male and Female Teachers

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ABSTRACT

Background : Increasing prevalence of metabolic syndrome causes the need for prevention of risk factors and markers, some of them are the role of leptin and cortisol. The aim of this study was to investigate the relationship between leptin and cortisol levels as risk factors of metabolic syndrome among men and women in the teacher group.

Method: A cross sectional study was performed with 86 teachers (16 men and 70 women). Characteristic sample, Anthropometry, Lipid profile, fasting blood glucose, blood pressure, cortisol and leptin were measured for all samples.

Results: Leptin levels are higher in women than in men (30.64±15.50 vs 7.87±6.02; p=0.005). While cortisol levels are higher in men than in women (12.09±4.94 vs 8.64±4.15; p<0.001). Age, stress levels, leptin and cortisol showed a significant association with metabolic syndrome. Leptin correlates significantly with High Density Lipoprotein/ HDL levels (r=0.391) for all samples. In men, leptin is significantly correlated with triglycerides/ TG (r=0.529) and systolic blood pressure (r=0.510), whereas in women, leptin correlates with abdominal circumference (r=0.479). Cortisol was significantly correlated with Fasting Blood Glucose/ FBG (r = 0.30) in all samples. In men cortisol was significantly correlated with Body mass index/ BMI) (r = 0.612 while in women it was significantly correlated with FBG (r = 0.328).

Conclusions: Leptin levels are higher in women than in men, but cortisol is higher in men than in women. In men, triglyceride levels and systolic blood pressure correlate with an increase in leptin, whereas in women is the abdominal circumference. In men, BMI correlates with cortisol and in women fasting blood glucose levels.

Keyword: *markers, metabolic syndrome, leptin, cortisol*

INTRODUCTION

Non-communicable diseases (NCD) cause the death of 40 million people each year, equivalent to 70% of deaths globally. The highest causes of death were vascular disease, chronic lung cancer, diabetes, and other NCD (44,25%; 22%; 9,75%; 4%; and 20%)[1]. Of this amount, 85% are in developing countries, one of which is Indonesia.

One of the main risk factors for NCD is metabolic syndrome[2]. The main parameters are blood glucose level, abdominal circumference, blood pressure, HDL levels, and triglyceride levels[3]. Several markers were then developed to detect an increased risk of metabolic syndrome including cortisol and leptin[4,5].

The hormone cortisol is a hormone that is associated with stress, not only in negative conditions, but also

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in a comfortable and happy condition[6]. Chronic stress is associated with hypercortisolemia and long-term sympathetic nervous system (SNS) activation that results in fat accumulation, especially in the abdomen[7]. Excess fat in the abdomen is one of the parameters of the metabolic syndrome. Identifying risk factors for cortisol is important for stress management as an effort to prevent metabolic syndrome.

Leptin is commonly known as the obese gene. People who are obese have high leptin levels. Leptin is identified as a regulator in regulating body weight. Errors in transportation can cause leptin resistance and cause obesity[8]. A literature review shows that of several markers available, leptin is an appropriate biomarker to identify metabolic syndrome[9].

Research on metabolic syndrome in Indonesia is still very limited. The results of the analysis of the Riskesdas data 2007 conducted by Nurhaedar Jafar showed that the prevalence of metabolic syndrome was 5.2% which increased along with the increasing prevalence of obesity[10]. Research on leptin and cortisol as a marker of metabolic syndrome has never been done before in Indonesia. This study aims to determine the relationship between differences in levels of leptin and cortisol in men and women, the influence of risk factors on metabolic syndrome and risk factors that correlate with leptin and cortisol in men and women in the teacher group.

Methode

The study with a cross sectional study design was conducted on a group of teachers in Makassar City. This study involved 12 selected schools and was part of a cohort study, educating teachers as an effort to prevent metabolic syndrome.

The number of samples that can be analyzed for this study is 86 people (16 men and 70 women). Demographic characteristics (age and sex), stress levels were measured using a questionnaire through interviews with respondents. Interview and measurement of anthropometry (weight, height, waist circumference/ WC) was carried out by trained personnel taken from undergraduate nutrition students public health faculty of Hasanuddin University. Blood collection is carried out by the prodia laboratory.

Metabolic syndrome

Metabolic syndrome is defined using criteria from the results of harmonization of several groups in the world. The following are the limits for determining the risk of metabolic syndrome parameters.

HDL levels, risk if <40 mg / dl male and <50 mg / dl female

Triglyceride levels, risk if ≥ 150 mg / dl

Glucose blood sugar levels, risk if fasting blood glucose levels ≥ 100 mg / dl

Blood pressure, risk if ≥ 130/85 mmHg

Abdominal circumference, risk if > 90 cm for men and > 80 cm for women

Blood samples were taken after fasting respondents for 12-14 hours were taken by medical personnel from the Prodia laboratory. HDL examination is carried out by Homogenous Enzymatic Colorimetric Assay method, examination of triglycerides by using enzymatic colorimetric method, whereas fasting blood glucose examination using the Hexokinase method. Blood pressure was measured in the condition of the respondent being seated, and being relaxed using Mercurial Sphygmomanometer.

Leptin and cortisol

Leptin and cortisol were measured using the enzyme immunoassay test method. Reagents used in the Diagnostic Biochem Canada Inc brand, where cortisol uses reagents with Ref can-C-270 and leptin using reagents with Ref: can-L-4260. Leptin and cortisol examinations were carried out at the Hasanuddin University Hospital Laboratory.

RESULT

Characteristics of samples based on sex can be seen in Table 1. The average age of male samples is higher than women (50,81 vs 48,89) but the stress level in women is higher than in men (29,00 vs 27,56). There are differences in anthropometry in men and women ($p<0,001$). There are differences in levels of leptin and cortisol in men and women ($p<0,001$ and $p=0,005$). Fasting blood glucose and triglyceride levels do not show the difference between men and women. However, there are significant differences in HDL levels, systolic blood pressure, diastolic and abdominal girth, where women are better than men.

The relationship between how many risk factors for MetS can be seen in table 2. The risk factors for age and stress are higher in respondents who experience MetS than those who are only at risk (consecutive p=0,010 and p=0,026). All MetS parameters show a meaningful relationship with MetS (p<0,05) as well as levels of the hormone leptin and cortisol. Respondents who have lower levels of leptin are at risk of developing metabolic syndrome (p=0,016) and respondents who have higher cortisol levels are at risk of developing metabolic syndrome (p=0,014). The relationship of MetS risk factors stratified based on sex can be seen in table 3. There were significant differences in age, systolic blood pressure, fasting blood glucose levels, triglyceride levels, HDL levels, between men and women in respondents who experienced metabolic syndrome.

The relationship between leptin and cortisol in several MetS risk factors and MetS parameters can be seen in Table 4. Leptin hormone is significantly associated with HDL levels and abdominal circumference (p <0,05) while cortisol hormone is significantly associated with fasting blood glucose levels (p < 0,001).

Table 1. Characteristics of Samples Based on Sex

	Variable	Men (n=16)	Women (n=70)	P value*
	Age (Mean±SD)	50.81± 3.89	48.89 ± 5.79	0.210
	Stress level (Mean±SD)	27.56±4.77	29.00±8.28	0.506
Anthropometry	weight (Mean±SD)	73.37±6.48	59.69±5.87	<0.001
	height (Mean±SD)	166.20±5.61	153.05±5.51	<0.001
	BMI (Mean±SD)	26.57±1.99	25.49±2.23	0.081
Hormone	Leptin (Mean±SD)	7.87±6.02	30.64±15.50	<0.001
	Cortisol (Mean±SD)	12.09±4.94	8.64±4.15	0.005
MetS parameter	FBG (Mean±SD)	99.81±25.41	94.46±22.95	0.411
	TG (Mean±SD)	176.81±94.95	135.14±67.70	0.113
	HDL (Mean±SD)	42.06±7.51	58.16±10.90	<0.001
	Systole (Mean±SD)	130.00±12.65	119.71±12.74	0.005
	Diastole (Mean±SD)	85.63±6.29	81.00±7.45	0.024
	WC (Mean±SD)	93.42±3.30	86.66±5.06	<0.001

*Sex difference are using T test

Table 2. MetS Risk Factors

	Mets (n=24)	Risk Mets (n=62)	P value
Age	51.21±3.39	48.48±5.99	0.010*
Stress	31.71±12.01	27.58±4.94	0.026*
BMI	26.29±2.21	25.46±2.19	0.122
WC	89.99±5.57	87.11±5.23	0.027*
Systole	130.42±15.17	118,23±10.79	<0.001**
Diastole	84.58±8,84	80.81±6.60	0.034*
FBG	113.58±34.06	88.44±11.99	<0.001**
TG	198.46±84.08	121.39±58.50	<0.001**
HDL	46.08±10.26	58.68±10.90	<0.001**
Leptin	19.46±12.49	29.09±17.50	0.016*
Cortisol	11.17±5.04	8.54±4.07	0.014*

* P < 0,05 ** P < 0,001

Table 3. MetS Risk Factor by Sex

	Mets		**Risk Mets**	
	Male (n=10)	**Female (n=14)**	**Male (n=6)**	**Female (n=56)**
Age	50.40±4.11	51.79±2.77*	51.50±3.73	48.16±6.13
BMI	27.01±1.97	25.77±2.31	25.83±1.99	25.42±2.23
WC	93.62±3.74	87.41±5.29	93.08±2.69	86.47±5.04
Systole	136±11.74*	126.43±16.46*	120.00±6.33	118.04±11.19
Diastole	86.00±6.99	83.57±10.08	85.00±5.48	80.36±6.59
FBG	101.50±31.37	122.21±34.34*	97.00±12.23	87.52±11.69
TG	212.10±103.80*	188.71±69.29*	118.00±31.88	121.75±60.85
HDL	38.80±6.32*	51.29±9.43*	47.50±6.35	59.88±10.64
Leptin	10.09±6.59	26.16±11.42	4.18±2.06	31.76±16.26
Cortisol	12.69±5.52	10.08±4.55	11.08±4.04	8.28±4.01

*P < 0.05

**P < 0,001

Table 4. Correlation Table Between Leptin and Cortisol With MetS Risk Factors and MetS Parameters

	Leptin			Kortisol		
	Men (n=16)	Women (n=70)	Total (n=86)	Men (n=16)	Women (n=70)	Total (n=86)
Stress	-0.263	-0.083	-0.038	0.130	-0.055	-0.051
Spiritual	-0.069	-0.178	-0.198	-0.293	-0.057	-0.063
Age	-0.226	-0.021	-0.099	0.124	-0.059	0.012
FBG	0.172	-0.150	-0.147	0.153	0.328**	0.302*
TG	0.529*	-0.032	-0.095	-0.352	0.027	-0.003
HDL	-0.212	0.180	0.391**	0.074	0.041	-0.120
Sistole	0.510*	-0.008	-0.136	0.007	0.006	0.097
Diastole	-0.078	0.107	-0.053	0.321	-0.089	0.059
WC	-0.074	0.479**	0.074	-0.483	0.014	0.099
BMI	0.420	0.050	0.067	-0.612*	-0.079	-0.083

*P < 0.05

**P < 0,001

DISCUSSION

This study shows the relationship between levels of leptin and cortisol with metabolic syndrome in teachers who are distinguished by sex. Leptin levels are higher in women than in men. In the group that experienced the MetS and risk of MetS, female respondents had higher levels of leptin than men. Leptin hormone levels are associated with obesity. Research conducted in Korea shows that serum leptin is associated with metabolic syndrome, especially in the body mass index[12]. A meta-analysis conducted by Zeng, et al showed that there was a relationship between leptin and an increased risk of heart and stroke[13].

Leptin is a hormone associated with regulating food intake and energy balance[14]. Leptin is closely related to the level of obesity, where obese people also have higher hormone levels than those who do not obese[15]. This

study showed that the average abdominal circumference and BMI of men were higher than women, however, based on the results of the analysis it was seen a positive correlation with the increase in levels of leptin hormone with abdominal circumference in women. The higher the abdominal circumference, the higher the level of leptin hormone. This study is in line with research conducted in Saudi Arabia, where leptin levels are higher in women and are positively correlated with BMI and abdominal circumference[16].

The hormone cortisol shows a significant relationship with the metabolic syndrome, where respondents who experience metabolic syndrome have higher cortisol levels than those at risk. Hormone cortisol is higher in men than in women, as well as in respondents who experience mets and are at risk of MetS, men have higher cortisol levels than women. This is the same as research conducted by Esteghamati, et al in Tehran, which shows high levels of serum cortisol in men compared to women after being justified by age, BMI, and abdominal circumference[17]. High cortisol levels are strongly associated with a person's stress level[7].

The hormone cortisol can be a marker of the metabolic syndrome. One mechanism that shows the relationship between metabolic syndrome and cortisol is hypothalamic-pituary-adrenal (HPA) active in respondents who experience Mets. One of the active activities of HPA is due to sustained levels of stress[4]. One of the factors associated with stress is work[18].

In this study, stress showed a significant relationship with the metabolic syndrome, but did not show a significant relationship with cortisol levels. A meta-analysis was conducted on 29 cross sectional studies by Pan, et al. Which showed that respondents who experienced higher stress had a higher prevalence of metabolic syndrome than those who experienced less stress[19]. Some mechanisms that can show this relationship are obesity[20], the occurrence of inflammation[21] and an increase in oxidative stress in respondents who are obese[22].

CONCLUSION

Leptin levels are higher in women than in men, but cortisol levels are higher in men than in women. Increased parameters of the metabolic syndrome also increase levels of leptin and cortisol, but there are different parameters that increased in men and women. This study strengthens that the hormone leptin and the hormone cortisol are markers for the determination of the metabolic syndrome.

Conflict of Interest: There is no any conflict of interest within this study and publication

Ethical Clearence: Taken from Hasanuddin University Ethics Committee with number: 969/ H4.8.4.5.31 /PP36-KOMETIK / 2017.

Source of Funding : Ministry of Research, Technology and Higher Education, Indonesia.

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DOI Numher: 10.5958/0976-5506.2018.01401.8

Awareness of Obstructive Sleep Apnea among University Students in Malaysia

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ABSTRACT

Background and Aims: Obstructive sleep apnea (OSA)is a sleep disorder which causes intermittent stoppage of breathing. This sleep disorder can lead to excessive daytime sleepiness, snoring and interferes with day to day work. In Malaysia obesity is prevalent in younger generation and lack of awareness of this disorder may contribute to increase in number of obstructive sleep apnea cases in future. Therefore, the aim of this research is to evaluate the level of knowledge and awareness of obstructive sleep apnea among the student community of a private Malaysian university.

Materials and Method: A cross sectional study design was employed and the subjects were selected by convenience sampling. Data was collected using self-administered questionnaires The questionnaire consisted of part A which focused on the socio-demographic profile and part B for awareness and knowledge of OSA. An informed consent was taken from all the participants.

Result: 133 of participants (38%) could correctly elaborate the abbreviation OSA. 91(26%)were able to correctly list at least one risk factor of OSA. 101 (29%)were able to correctly list out at least one symptom while 63 (18%)could correctly list out at least one complication of this condition. 63 (18%)could correctly select at least one method of diagnosing OSA and 56 (16%) could correctly list out at least one treatment option for OSA.

Conclusion: The knowledge and awareness of OSA is poor among the student community. Awareness of this condition should be raised through social media and campaign.

***Keywords**: Obstructive Sleep Apnea, awareness, students.*

INTRODUCTION

Obstructive sleep apnea (OSA) is a condition in which there is temporary cessation of breathing during sleep characterized by repetitive episodes of partial or complete upper airway obstruction[1]. This situation causes the diaphragm and chest muscles to work harder to open the obstructed airway. Various studies have emphasized on the adverse effects of this condition the likelihood of hypertension, cardiovascular disease, stroke, daytime sleepiness, fatigue, motor vehicle accidents and diminished quality of life[2,3,4]. OSA can impair the individual's cognitive function which leads to deficits in executive functions, attention and memory. The risk factors for this condition include obesity, alcohol intake, smoking, nasal congestion and estrogen depletion (as in menopause). Continuous positive airway pressure (CPAP) is the treatment choice for OSA as it improves daytime function and may positively improves cardiovascular function[2].

In recent years, overweight and obesity have been the two major concerns in relation to Malaysians' health. The National Health and Morbidity Survey (NHMS) statistics in the year of 2011 indicated the prevalence

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of overweight and obesity among Malaysian youths 18 and 19 years old categories was 14.1% and 9.9%, respectively and their corresponding rates reportedly rose to 18.1% and 10.8% among young adults aged 20 and 24 years old (Institute of Public Health, 2011)[5]. OSA is more common among obese patients. The mechanism involved is mechanical obstruction by density of the fat around neck during sleeping[6]. A similar research conducted in Singapore revealed poor level of awareness and knowledge about OSA in the general population[7]. Hence, this study was conducted with an aim to assess the awareness and knowledge of OSA among university students in Malaysia.

MATERIALS AND METHOD

Study design

This is a cross sectional study conducted at a private university in Selangor, Malaysia with the sample being drawn from the student community of the university.

Sampling method and sample size

For sampling method, this study uses the convenience sampling by selecting those people who are available at the time. The sample size was calculated using single population proportion. (Jane Ong ' Ang'O, 2016)

$$\frac{\frac{z^2 \times p\,(1-p)}{e^2}}{1+\left(\frac{z^2 \times p\,(1-p)}{e^2 N}\right)}$$

Where; N = Population size, e = Margin of error (as a decimal) z = Confidence level (as a z-score) p = prevalence of respondent, from previous research (Alexandria University Faculty of Medicine) Thus, n = 350

All students who are above 19 years of age and studying in university in Selangor Malaysia were included in this study.

Study Instrument used:

A questionnaire was developed after an extensive literature search. The original questionnaire was developed in the English language in order to maintain consistency with questions adapted from references with and without modifications. This questionnaire was designed with multiple choice questions. It was designed keeping in mind the population, time duration to answer and literature search. It consisted of questions regarding the definition, risk factors, symptoms, complications, diagnosis and treatment of obstructive sleep apnea. The questionnaire was pilot tested on 25 randomly selected university students to determine if there was an ambiguity in the wording. The questionnaire was accordingly modified and later administered to the participants.

Ethical Consideration

Consent form was written on the front page of the questionnaire and an informed consent was taken from all the participants of the study. Ethical clearance was sought from the institution's ethical committee

Data Collection and Statistical analysis

The questionnaire was distributed to the students who are spotted in the campus during their leisure time. Informed consent was obtained from all the participants. After compiling the data, the information was analyzed by using IBM Statistical Package for Social Science (SPSS) version 23. The descriptive statistics namely percentage was used in presenting the results of study.

RESULT

This study was conducted on 350 individuals studying in a private university in Malaysia. 217 were males and 133 were females. All the participants were in the age group of 20-30 years.185 (53%)were pursuing degree, while 161(46%)studying in diploma courses and 4(1%) were in master's program.

Table 1 Summary of the Questionnaire Answered

Question	Answered Correctly	Answered Incorrectly
Q1 Definition	133(38%)	217(61%)
Q2 Risk Factors	91(26%)	259 (74%)
Q3 Symptoms	101 (29%)	249 (71%)
Q4 Complications	63(18%)	287 (82%)
Q5 Treatments	56(16%)	294(84%)
Q6 Diagnosis	63(18%)	287 (82%)

In the present study, only 133 of respondents (38%) were able to correctly elaborate the abbreviation of OSA as obstructive sleep apnea. This signifies that most of them had never heard of this term.

Awareness and knowledge of risk factors of OSA

In the present study, 91 of the respondents (26%) were able to correctly identify the risk factors of OSA while a vast majority 259 respondents (74%)selected wrong risk factors or a combination of wrong and correct risk factors.

Awareness and knowledge of symptoms of OSA

The correct response regarding the symptoms was observed in 101(29%) while 249 respondents (71%) wrongly answered this question.

Awareness and knowledge of diagnosis of OSA

Most of the respondents had no idea about how this condition was diagnosed. 63(18%) correctly answered this question while 287 (82%) of participants incorrectly answered this question.

Awareness and knowledge of complications of OSA

The complications related to OSA include cognitive dysfunction, hypertension, stroke and mood disorder. The criteria for correct answer is respondent's ability to select at least one of the complications. Of all the participants, 63 (18%) could respond correctly by identifying one of the complications of OSA.

Awareness and knowledge of treatment for OSA

The correct options provided for this question were application of continuous positive airway pressure (CPAP)and reducing body weight. The criteria for correct answer is participant's ability to pick up at least one treatment option. We observed that 56 (16%) of the participants could correctly answer while 192 of participants (84%) incorrectly answered this question.

We found 42 (12%)of the respondents could correctly answer all the questions of the questionnaire.

DISCUSSION

A study revealed that Malaysia has the highest number of overweight individuals at 45.3% of its population followed by South Korea (33.2%), Pakistan (30.7%), and China (28.3%). It showed that 49% of women and 44% of men in the country were obese[8,9]. An interesting and unexpected observation that has emerged is that, while Asians are less obese than Caucasians, the prevalence of the disease in the East is almost as much as in West. Moreover, for a given age, sex, and BMI, Asians have greater disease severity than Caucasians. The greater severity of OSA among Asians is attributed to the differences in the craniofacial features between Asians and Caucasians [10]. As OSA is one of the sequelae of obesity and daytime sleepiness is one of the consequences of OSA, this study was conducted to assess awareness of this condition among the university student population.

Based on the data we collected, only 133 of the respondents (38%) were aware of this condition and were able to define Obstructive Sleep Apnea correctly. The prevalence of sleep apnea tends to increase with age[11]. Our study population were in the age group of 20-30 years and this could contribute to the lack of awareness of OSA among them. In a previous similar research conducted on the general population in Singapore through telephonic interview regarding awareness of Obstructive Sleep Apnea showed 170 out of 1306 respondents able to elaborate OSA correctly reflecting poor knowledge of this condition[7].

Most of the respondents in our study did not possess sufficient knowledge of the condition mainly regarding risk factors, diagnosis, treatment and complications of OSA. Only 42 respondents (12%) were able to answer all the questions correctly. In our study, 38% could correctly define OSA,26% could identify at least one risk factor, 29% could identify at least one symptom, 18% were aware of the complications and method of diagnosis of OSA while only 16% had knowledge of treatment options for this condition. Our findings were better than the results reported by a similar study in Singapore where a total of 77(5.9%), 158(12.1%), 150(11.5%), and 110(8.4%) respondents were able to correctly list out at least one risk factor, symptoms, complications and treatment option for OSA respectively[7]. This may be attributed to the educational status of our study population when compared to the general population of the previous study.

The level of education however did not correlate with the level of knowledge regarding OSA in our study. Only one out four students doing master's program was

able to demonstrate full awareness and knowledge of OSA. It is not surprising as a study conducted by Reuveni H et.al on primary care physicians in Israel also reported inadequate knowledge of OSA among physicians[12]. A similar study among health professionals and medical students in South India about OSA being an established and modifiable risk factor for hypertension and ischemic stroke also concluded about the poor level of knowledge about OSA[13].

CONCLUSION

Our study shows that university students in general are not aware of Obstructive Sleep Apnea and the complications it can lead to. The result is expected due to similar findings from previous studies in other countries. As this study was conducted on young university students having normal BMI, most of them were a-symptomatic. This maybe one of the reasons they were unaware of this condition in spite of the educational status of our study population. As obesity is prevalent in Malaysia, a similar study in future on the general population would be more beneficial. The results of this study however throw light on the importance of educating the general public and creating an awareness of this condition.

Conflict of Interest – Nil

Source of Funding – Nil

Ethical Clearance - Obtained

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DOI Numher: 10.5958/0976-5506.2018.01402.X

Learning Model in Nursing Education

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ABSTRACT

Lecturing process in educational nursing institution needs several strategies and innovations in overcoming students' learning barrier and increasing the output quality of nursing students. This research is trying to develop a learning model at the educational nursing institution using a various concept of the learning model. This research is explanative using the population of nursing students across South Borneo. The sample were taken with Proportional Random Sampling with total 178 nursing students. The data gathered are analyzed with CFA and Partial Least Square (PLS) test model. Student learning model at educational nursing institution is built upon student's achievement and learning motivation whereas the motivation is affected by the lecturer's character and learning barrier that student has. In order to achieve optimal quality of learning, the nursing students must have a support to raise their independence and activity in the learning process.

Keywords: *Learning model, Student, Nursing education*

INTRODUCTION

Nursing students in lecturing process usually have fluctuated achievement which is connected with learning barrier that affects students' learning motivation. Both student's and lecturer's character also have roles in student's learning motivation which will affect student's affective and cognitive achievement(1).

Nursing students in Health Polytechnic of Banjarmasin feel physical exhaustion at the end of campus activities which is 58.2% either in lectures or practice, they also feel less enthusiastic with the lecture which is 43.1%.

Data result of Nursing Competence Test from Ministry of Research, Technology, and Higher Education in September 2015 showed no Educational Nursing Education in South Borneo that has 100% passing rate; even though Poltekkes Banjarmasin has a passing rate of 98.6%.

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Learning Model from Klein et al. (2006) showed that Course Outcome of students both affectively and cognitively is correlated with learning motivation, perceived barriers, and both student's and lecturer's characteristics(1). This research aimed to develop a learning model for Educational Nursing Institutions.

MATERIALS AND METHOD

This study was explanative research which explains various factors correlated between nursing student character, lecturer's character and learning barrier as exogenous variable that can affect endogenous variable consists of student's motivation and learning result where the connection between this factor will form a learning model for Nursing Educational Institution in South Borneo. The population in this research was Nursing Student Diploma in every Educational Nursing Institution in South Borneo with the total sample of 178 students that was acquired with proportional random sampling.

Data was acquired by distributing the questionnaires to every nursing student that had been explained about this research's aim before. The respondents didn't need to fill their names and asked to fill the questionnaire as honest as possible.

FINDINGS

The first phase is to analyze/evaluate the item reliability of test model PLS on its loading factor (standardized loading). The second phase in evaluating a concept model is to evaluate variables' reliability by observing Cronbach's Alpha score and Composite Reliability score or Constructive Reliability. The last phase of model analysis is to analyze the model test to acquire the answer the research's hypothesis by observing Path Coefficient score. The result acquired from Statistical Analysis is Concept Model of Learning of Nursing Student in South Borneo as constructed below:

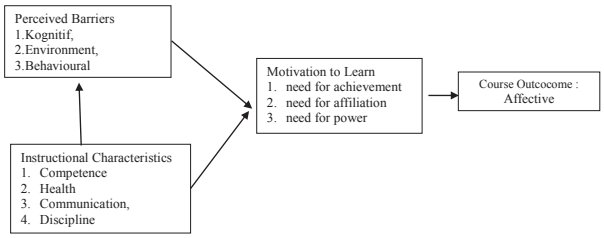

Figure 1. Concept Model of Learning for Educational Nursing Institution in South Borneo Indonesia

DISCUSSION

Influence of Lecturer's Character on Learning Barrier

Nursing students oftentimes experience learning barrier in various forms such as ineffective learning method, less learning time and clinical practice, inability to apply research result in nursing practices, language barrier, communication in learning process and other barriers to reach achievement in both academic and clinical practices where lecturer's role is needed to overcome this learning barrier[2–6]. According the analysis result of pathway, test shows that there is an influence of Lecturer's character toward learning barrier in nursing students in nursing major of Health Polytechnic of Banjarmasin. This is corresponding to the concept that was submitted by[1] that Lecturers have an important role in overcoming Learning Barriers that students have in lectures.

Lecturers' role is very helpful in overcoming students' Learning Barriers from the environment, the students' cognitive condition, and students' habits, which will hopefully increase students' achievement[7]. A quality lecturer is competent and good in both physically and mentally. Lecturers are demanded to have a communicational skills to interact with students by involving and respecting students in the learning process; always creative, following the recent development of science and technology and respecting the difference on students[8–11].

A quality lecturer will motivate and increase the knowledge of students where the transfer of knowledge will be easily conducted and effective in learning the nursing theory and practical skills[9,10,12].

Nursing education in South Borneo is obsolete, where the students must have a face to face learning with the lecturers. This traditional method would certainly cause the overwhelming feeling, take too much time and thus create learning barrier. In order to overcome this learning barrier, the lecturer must use several learning methods and stimulate students' critical thinking[3].

Nursing lecturers are demanded to help students' self-esteem because it will help them to overcome the learning barrier. Lecturers' skill to be a role model is important to initiate a good communication between the lecturer and the students. Various professional Nursing workshop and socialization can be given to students in order to solve the conflict that the students have in their minds and it will help them in nursing clinical practice environment[2].

Influence of Lecturer's Character on **Learning Barrier**

The analytic result from Pathway test shows that there is an influence of Lecturer's character toward students' learning barriers in Educational Nursing Institution on South Borneo. This condition is corresponding with Concept Model from Klein et al. (2006) which explains that an interesting character of a lecturer includes a good method for transferring knowledge. In class instruction, generally, students follow learning activity in the same place and have a face to face interaction with the lecturers. Lecturer's Proximity theory shows that lecturer's communication skill to involve both verbally and non-verbally with the students will improve the learning motivation and experience; lecturers play an important role in the outcome of a teaching-learning interaction. The interaction between lecturer and students and learning control of knowledge transfer will improve Nursing students; learning motivation[1,13].

Lecturer-student interaction with a humanistic and

communicative character and understanding with the value that students have will have an effect on students learning motivation. Interaction aspect may probably the most important thing. Uniting lecturer's character, the method of learning, and the students' characters is the thing that influences motivation. A student that learns is more sensitive to the lecturer's learning method[1,8,11].

Influence of Learning Barrier on Nursing **Students' Motivation**

The analytic result from Pathway test shows that there is an effect of learning barrier toward learning motivation in Nursing students in South Borneo. This condition is suitable with the concept that Klein et al. (2006) explained the perception of learning barrier is felt by the students in the learning situation, learning environment, and the learning process itself. The objective barrier that the students felt for instances are the insufficient time, material, or information in the lecture. Learning barrier both perceptively and objectively will influence the students' intention or learning aim and directly will affect the effort that comes from the motivation to improve achievement, affiliation needs, and power needs[7,13,14].

Learning barrier must be solved because it can become a crucial and hard to be prevented when it already happens. The various condition will influence teaching-learning process and balance; because they are correlated (interrelation) and bipolar activity. Process in Pedagogy education demands a condition that has a correlation between learning barrier and learning motivation[15].

Influence of Motivation on Learning Result

Need for achievement is a push to overcome barrier, to achieve, and act more to reach a higher standard in a competition. This need constituted by one's willingness to manage or lead the others. It consists of 2 kinds of needs for power, which are personalpower and social/ institutional need. People will be happy to have power upon all things, that they chase upon everything, and relational need is interpersonal need that is modest and close in organizational environment. The third motivation is Affiliation need that reflects the desire to interact socially to people. In other words, Affiliation need is the need for social relation in working environment. One with high affiliation need place the quality of personal relation as an important thing.

Motivation becomes important because motivation shows how students' self-efficacy quality on comfort and persistence is needed in improving students motivation and motivation shows how nursing students are able to surpass various challenge in education process[1,16,17]. Support or motivation directs individuals to struggle harder to get personal achievement than to get a reward. This, in turn, cause them to do something that is more efficient than before. A projective technique is used to measure one's motive to achieve. Basically, this technique tries to ensure how far one's original mind can become ideas that oriented to achievement. For instance, if one writes a story based on a picture that is shown, then we can count the number of ideas of the story that has relation to achievement. This simple count than can be used as a score of the need for achievement, that reflects one's support to achieve or to score the motivation to achieve. A projective technique that is defined above is a part of the early situation about the need for achievement[14].

Parental culture and nurturing pattern will influence the level of need for achievement of Nursing students besides being influenced by environmental factor either in campus or outside the campus such as the online community[16–19].

Lecturer factor can improve the understanding and responsibility since there is a collaboration between the lecturer and the students. Lecturers must improve the teaching method that is effective and improve their knowledge of interaction with the students since it will improve students' motivation[16,19–21]. Correlation between the factor that influences motivation can either strengthen or weaken motivation of the students as the subject of Nursing education[16,20,22,23].

Affective achievement is an important score point to emphasize and strengthened in Nursing education. Educational Nursing Institutions need to observe the students' affective skills because later in the practical field the students will interact directly with patient that has real life emotion and feeling that not only notice the logical problem and cognitive skills. The Affective domain must be constantly developed in health care including in nursing care either in hospital or community nursing. Learning of this domain will improve internalization and commitment that is shown with emotion, interest, behavior, values, and faith where they will be needed in approaching the patient[24–31].

A nursing research is conducted with hope to produce new discovery that can help to contribute either for science and improvement of nursing care. The research result can be described as follows:

Learner character is not significantly influencing either Perceived Barrier or Learning Motivation. This discovery is supported by the researchs[13,32–34].

GPA that use the cognitive scoring as the measurement of learning achievement is not valid and can be biased if used to measure the quality of student. Bias can happen because of fake rewards from the lecturer where it can fog the objective scoring that students meant to get. This problem is conveyed by[35,36] and suggested to be prevented as early as possible. The lecture is nursing education must improve their knowledge about the thorough and comprehensive clinical evaluation. Lecturers are also demanded to implement the effective and objective method and undertake clinical evaluation that is formative and summative. Also, the weight of work for the lecturers must be revised. Therefore, effective and comprehensive evaluation for Nursing students clinical competence is needed.

CONCLUSION

Nursing education in South Borneo is built upon the lecturers' character that influences nursing students' learning barrier and learning motivation where a good approach on their motivation may improve their achievement either in the class lectures or clinical and practical field in hospital or community.

ADDITIONAL INFORMATION

Ethical approval: yes, conflict of interest: no, Self funding: yes.

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DOI Numher: 10.5958/0976-5506.2018.01403.1

Effect of Low Methionine Formula on Levels of IL-1β Serum and IL-1β Gene Expression in Knee Joint Cartilage Tissues of Normal Rabbits and ACL Induction OA Models

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ABSTRACT

Methionine deficiency is an environmental factor can degrade the quality of the bone, cartilage and modulate chondrocytes to increase protease secretion and change gene expression.The aim of the study was to determine the effect of methionine deficiency on IL-1β serum, expression of IL-1β in cartilage tissue of knee joints of New Zealand rabbit's (*Oryctologus cuniculus*). The experimental animals were divided into 6 treatment groups: normal group with the addition of DL-methionine 0.25%, normal group with the addition of DL-methionine 0.15%, normal group with the addition of DL-methionine 0.00%, ACL group with the addition of DL-methionine 0.25%, ACL group with the addition of DL-methionine 0.15%, ACL group with an addition of 0.0%. Examination of IL-1β serum by ELISA with RayBio Rabbit commercial kit. Examination of IL-1β expression immunohistochemically using IL-1β anti-rabbit primary antibody with a Santa Cruz commercial kit (Sc7884). The results were analysed using one way ANOVA, followed by LSD. The results indicate that methionine deficiency (DL-methionine 0.0%) is able to increase IL-1β serum. The expression of IL-1β in knee joint cartilage tissue appears to be increased significantly through the metabolic effects or interactions with biomechanical changes. Methionine deficiency has the same ability in normal and pathological conditions, has a tendency to increase IL-1β serum and IL-1β gene expression in joint cartilage tissue.

Keywords: *Methionine deficiency, Il-1β serum, IL-1β expression, Knee joints cartilage*

INTRODUCTION

Methionine as an essential amino acid in the body's metabolic cycle has the ability at several control points including in protein synthesis, DNA / RNA synthesis, genetic expression, trans-methylation and fat, carbohydrate metabolism[(1)]. Inadequate nutritional intake when conditions require high nutrient levels will sharply increase the risk of micronutrient deficiency and can interfere with growth in adolescence and will increase the risk of degenerative diseases in old age[(2)].

One of the degenerative diseases is osteoarthritis (OA) which can cause chronic disability and have serious health impacts, especially in the elderly[(3)]. Osteoarthritis is a multifactorial disease caused by genetic and non-genetic risk factors or environmental factors such as age, obesity, injury, mechanics, metabolic disorders and endocrine. Through different molecular and cellular mechanisms, various risk factors cause changes in the expression of cytokine, proteinase, extracellular matrix proteins in cartilage to form the pathogenesis of osteoarthritis[(4-7)]. Interleukin-1β (IL-1β) is the main pro-inflammatory cytokine that plays a role in catabolic processes that induce cartilage

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damage, decrease proteoglycan synthesis, collagen and increase aggrecan secretion and stimulate chondrocytes to produce matrix metalloproteinase (MMPs) enzymes. [8] IL-1β adheres to the receptor on the surface of chondrocytes and synoviocytes causing transcription of MMPs genes so that enzyme production increases[9]. Increased production of MMPs, especially MMP-13, can mediate the degradation of type II collagen and aggrecan proteoglycans[10,11].

Methionine is known as precursor in the formation of cysteine was the main source of sulphate for sulphatation reactions for synthesis of glycosaminoglycan, proteoglycan[12]. Sulfation of extracellular matrix macromolecules is very important to maintain the quality of cartilage. The loss of extracellular matrix proteoglycans is an early sign of osteoarthritis.

Decreased proteoglycans cause the extracellular matrix to dehydrate, decrease the ability to withstand loads. This causes chondrocytes to increase protease secretion and degeneration of cartilage tissue. The hypothesis of this study is that methionine deficiency can increase IL-1β serum and increase IL-1β expression in cartilage of the knee joint of normal rabbit and rabbit model OA.

MATERIALS AND METHOD

Methionine deficiency formula

The methionine deficiency formula was prepared at the Food Technology Laboratory of the Health Department of Malang. It was formulated using a mixture of local food ingredients in the same amount and composition as cornmeal, soy flour, polar, vegetable oil and salt, minerals, vitamins. Methionine used in the form of DL-methionine and added to the formula with a dose of 0.25%, 0.15% and 0.0% per 1 kg of formula. The nutrient contain of the three DL-methionine formulas is the same, protein (12.9%), fat (8.7%) and carbohydrates (65.4%).

Animals Model OA

Female, white, 4-6 months old, New Zealand rabbits (*Oryctologus cuniculuc*) from Modern Rabbit Farming of Batu Animal Husbandry Department were used as an animal model ACL. All procedures were performed on the approved research protocol by the Ethics Committee of Faculty of Medicine, Universitas Brawijaya (Number:372/EC/KEPK/09/2016). As an Anterior Cruciate ligament incision model (ACL) conducted by a team of veterinary surgeons from Animal Clinic of Central Animal Husbandry Training (BBPP), Center Batu, East Java.

Design

The rabbits were divided into 6 groups: normal rabbits with DL-methionine 0.25%; normal rabbits with DL-methionine 0.15%; normal rabbits with DL-methionine 0.0%, ACTL rabbit normal rabbits with DL-methionine 0.25%; normal rabbits with DL-methionine 0.15%, 0.15% DL-methionine 0.0%.

Measurement of intake

DL-methionine intake was measured every day (g/day/rabbit). It was calculated by dividing the total intake by 35 days.

IL-1β serum

IL-1β serum was measured using ELISA, and performed according to commercial kit instruction (Ray Bio Rabbit IL-1β, ELL-IL-1β). A 50µ blank and standard solution were put into empty wells. A total 50µl of serum each sample and put into the wells and incubated in at 37^{o}C, covered with thin-foil wrap for 30 minutes. The solution was rinsed 4 time with PBST, added 50 secondary antibody conjugated with HRP and incubated once more in 37^{0}C, covered with wrap for 30 minutes. After 15 minutes of 37^{0}C incubation stop solution (in NaOH) was added and ELISA plate was read at 450 nm wavelength.

The expression of IL-1β

Immunohistochemistry was used to measure IL-1β expression in joint cartilage. Using a commercial kit (Santa Cruz ((Sc7884)) with polyclonal anti-rabbit primary antibody IL-1β. The procedure following the manufacturer's protocol. Observation of chondrocytes was carried out using a BX51 (Olympus) microscope on 400 x objective magnification.

Statistic analysis

All data obtained were expressed as mean ± standard deviation, then analyzed using ANOVA and Post Hoc test with LSD test.

FINDINGS

Intake of Methionine Formula

In normal rabbits the average food intake was different between treatments, low methionine intake was more than other treatments. Induction of ACL intake low methionine did not increase food intake, intake of food was lower although statistically insignificant (table 1).

Table 1. Mean Intake of Methionine Formula per day

DL- metionine	n	Intake of Normal Rabbit	p-value	Intake of ACL Rabbit	p-value
		Mean ± SD*(g/day)		Mean ± SD*(g/day)	
DL-metionin 0.25% per 100g	4	60.20 ± 1.73[a]	0.00	76.86 ± 0.82	0.14
DL-metionin 0.15% per 100g	4	66.59 ± 2.46[b]		74.12 ± 2.76	
DL-metionin 0.0% per 100 g	4	77.67 ± 0.94[c]		73.58 ± 2.59	
Note: *Ducan test results show if mean ± SD there are different letters then there is a meaningful difference and if it contains the same letter there is no difference.					

IL-1β Serum

In general, there was no difference in serum IL-1β levels between treatments. Although it was not statistically significant, low methionine intake in normal rabbits had a slightly higher IL-1β serum level compared to other rabbits. Induction of ACL increases serum ILl-1β levels.

Table 2. Concentration of IL-1β serum of rabbits

Formula of methionin	**n**	**IL-1β concentration (µg/dl) Rabbit Normal**	**Sig**	**IL-1β concentration (µg/dl) Rabbit ACL**	**Sig***
		Mean ± SD*		**Mean ± SD**	
DL-methionine 0.25% per 100 g	4	0.20 ± 0.10[a]	0.00	0.23 ± 0.04[a]	0.00
DL-methionine 0.15% per100 g	4	0.15 ± 0.00[b]		0.14 ± 0.03[b]	
DL-methionine 0.0% per 100 g	4	0.22 ± 0.01[c]		0.24 ± 0.02[a]	
Note: **One way Anova* results, followed by post hoc test using *LSD* [a,b,c]different letters indicate a significant difference.					

Expression of IL-1 β

Expressions of IL-1β in cartilage of the knee joint between treatments was a significant differences. Low methionine intake in normal rabbits IL-1β expression was higher than other rabbits. ACL induction increases IL-1β expression in cartilage of the knee joint, although it was not statistically significant.

Table 3. Average IL-1β expression in rabbit knee joint cartilage tissues

Formula DL- methionine	n	Expression of IL-1β normal rabbit Mean ± SD*	p-value	Expression of IL-1β ACL rabbit Mean ± SD*	p-value
DL-methionine 0.25% per 100g	4	3.75 ± 1.50[a]		6.25 ± 0.96[a]	
DL-methionine 0.15% per 100g	4	12.25 ± 0.96[b]	0.01	9.00 ± 0.82[b]	0.00
DL-methionine 0.0% per 100 g	4	15.25 ± 0.96[c]		15.75 ± 1.26[c]	

Note: *One way Anova results, followed by post hoc test using LSD
[a,b,c]different letters indicate a significant difference.

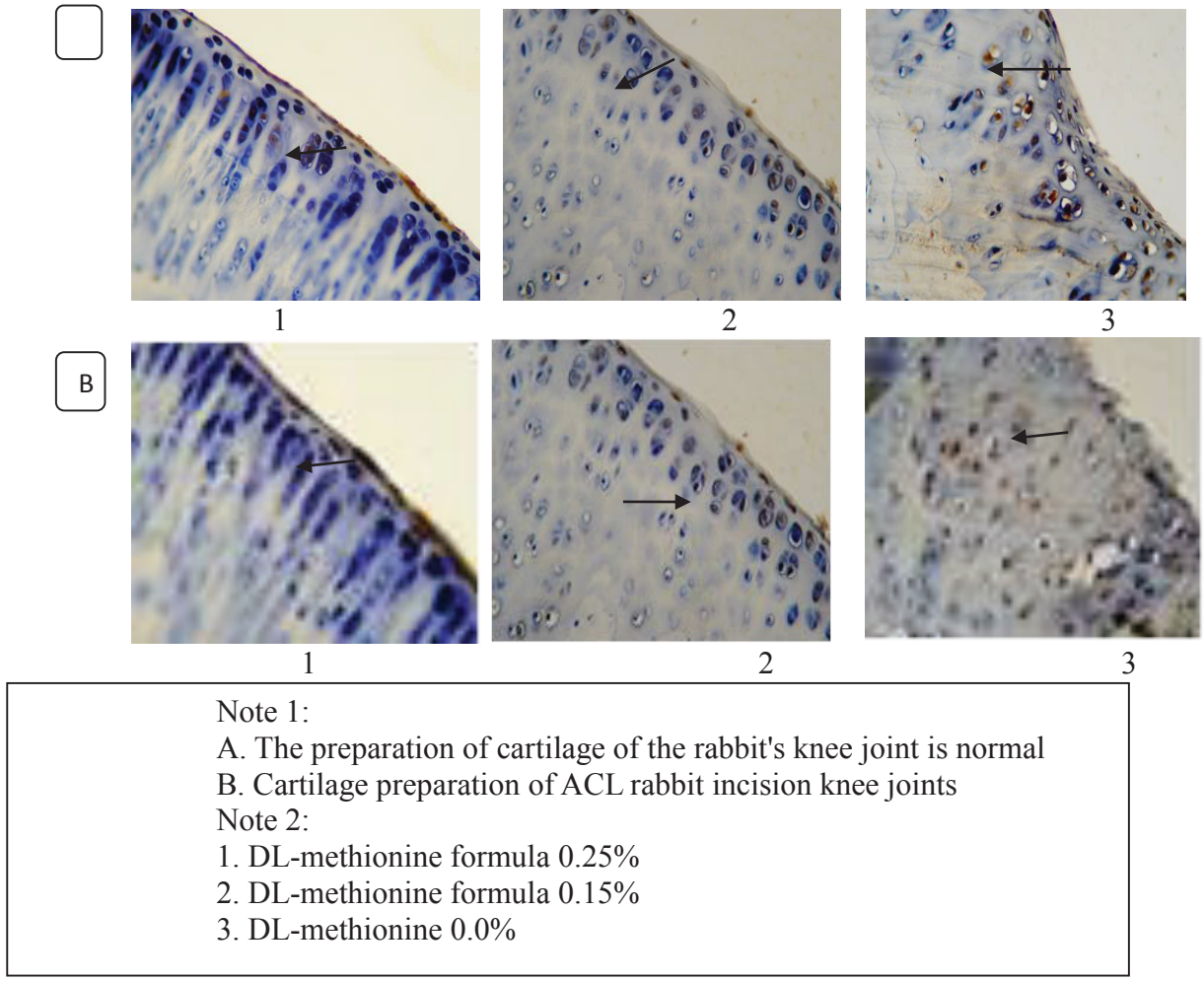

Figure 1. Expression of IL-1β by immunohistochemical method (400 x enlargement) appears brownish in the cytoplasm of cells, using stained DAB.

DISCUSSION

Nutritional deficiency or imbalance of nutrients is one of the environmental factors that can affect cartilage health. Methionine as an essential amino acid is known to have a very important role for growth and development[13]. Several studies have proven that reducing methionine in the diet can prolong life span, induce changes in energy metabolism, weight loss[14]. In the group of normal rabbits which were given a low methionine formula, more food intake was compared to the control rabbit group (DL-methionine 0.25%). In another study the same results, in adult mice that were given methionine (DL-methionine 0.0%) diet for 6 months increased food intake. According to Hasek, animals fed a low methionine diet would consume more food than animals fed a control diet (0.86% methionine) [15].

An imbalance of amino acids can cause a reduction in the flexibility of the food consumed. According to Harper, methionine is one of the amino acids that has the ability to eat from other amino acids. So that deficiencies and excess of methionine intake have a large impact on food consumption. Several previous studies have shown that methionine restriction diets (DL-methionine 0.0%) can increase the flexibility of metabolism and energy use or glucose during normal conditions[15,16]. So limiting methionine in normal conditions can increasing energy use and energy expenditure[17]. Changes in plasma amino acid concentrations can physiologically contribute to conditions of malnutrition and inflammation, low methionine intake has been shown to be involved in inflammatory responses and oxidative stress[18]. In the elderly, interleukin-1 plays a role in normal homeostasis and the inflammatory response that is responsible for the development of chronic diseases such as osteoarthritis[19]. In this study giving a low methionine formula (DL-methionine 0.0%) gave a minimal effect on inflammation. Supported by several other studies that show that increased IL-1β in serum occurs in diseases associated with metabolic syndromes such as atherosclerosis, chronic heart failure and type 2 diabetes, 1 and autoimmune diseases and rheumatoid arthritis[20,21].

Interleukin -1β (IL-1β) has been known to be a major mediator of inflammation that damages joint cartilage. IL-1β is produced by inflammatory cells (lymphocytes, granulocytes, plasma cells) of the synovial membrane and by the chondrocytes themselves by autocrine or paracrine. IL-1β works by binding to specific receptors on the cell membrane, initiating cascades that cause induction and increase or inhibit various immune responses[22]. Interleukin-1β has the effect of increasing the secretion of MMPs including MMP-13, suppressing type II collagen synthesis, inhibiting TGF-β which serves to stimulate chondrocyte proliferation, matrix synthesis[18,23,24].

In this study normal rabbits which were given a low methionine formula had IL-1β expression in the knee joint cartilage higher than normal rabbits which were given enough methionine formula (DL-methionine 0.25%) ($p < 0.05$). This shows that low methionine intake has the potential to initiate and improve the development of osteoarthritis. In the posttraumatic phase there is an increase in inflammatory mediators that cause acute inflammation resulting in homeostasis and metabolic imbalances[25].

Under conditions of low methionine intake, causing the synthesis of glycosaminoglycan (GAG) including proteoglycans, chondrocytin sulphate the extracellular matrix component of cartilage becomes obstructed[26,27]. Reducing the synthesis of glycosaminoglycan or proteoglycans will change the structure and composition of extracellular matrices to cause changes in biosynthesis and chondrocyte activity which are the beginning in the pathogenesis of osteoarthritis[28,29]. Interleukin -1β (IL-1β) can induce matrix metalloproteinase (MMP) enzymes which can degrade various components of extracellular matrix such as collagen, proteoglycans in physiological and pathological conditions[30]. Chondrocytes secrete matrix metalloproteinase-13 (MMP-13) in response to interleukin-1 (IL-1).

Limitations

This study was carried out in the short term to determine the effect of intake of methionine deficiency on catabolic gene expression in normal knee joint cartilage tissue and the OA damage model was not significantly different. Further research is needed with a longer period of time and more samples to determine differences in the effects and mechanisms of methionine deficiency on the expression of catabolic and anabolic genes in knee joint cartilage in normal weight or obese human or experimental animal models.

CONCLUSION

This study shows that methionine deficiency has the same ability in normal and pathological conditions, has a tendency to increase IL-1β serum and increase IL-1β gene expression in knee joint cartilage tissue.

ADDITIONAL INFORMATIONS

The funding of this research was obtained from the Ministry of Health of the Republic of Indonesia. Before the implementation in the field, ethical clearance was obtained from Ethical Committee of Brawijaya University, Number: 372/EC/KEPK/09/2016. There is no conflict of interest relating to this research activity.

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DOI Numher: 10.5958/0976-5506.2018.01404.3

Pseudo National Security System of Health in Indonesia

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ABSTRACT

Indonesia's national health insurance program requires participants to contribute every month. After paying, participants have the right to obtain a single identity and benefit from health services. The service of the Health of Social Insurance Administration Organization still has some problems that are experienced by Health BPJS participants. The problem were rejected by the hospital, the claim value of BPJS was lower than the real value of health care costs, limited medicines and also the JKN system which was still limited in benefits. The concept and implementation of JKN itself is an effort to move the burden of JKN financing which is the state's obligation to citizens with sanctions. JKN actually becomes an additional burden for citizens and the state should take the largest portion of JKN financing. The Indonesian JKN system itself is a pseudo social security.

Keywords: *Health insurance, Pseudo national security system*

INTRODUCTION

The implementation of social security for all Indonesians is actually the state's obligation. National Social Security System (SJSN) brings new hope for the realization of social welfare for all Indonesian people[(1)]. Law Number 40 concerns on SJSN which contains the concepts that is in line with the constitution that compulsory social security for all residents including National Health Insurance (JKN). This means that every citizen has the right for social security when they are sick[(2)]. The implementation of national health insurance as part of the national social security system is managed by a government agency called the Social Security Administering Agency (BPJS)[(3)].

BPJS has a representative office in the Province and branch offices in the districts. BPJS is responsible for receiving registration and managing data of JKN, collecting JKN contributions, managing JKN funds, financing the health services and paying JKN claims[(4)]. SJSN that is held should be a form of the role of the state in overcoming various problems faced by the community[(5)]. The state in this case precisely delegates the role of organizing the national social security system to a public agency, namely BPJS. BPJS is a legal entity formed to organize a health insurance program specifically commissioned by the government[(6)].

Health services are entitled to all citizens. Indeed, any disturbance, intervention or injustice, indifference, whatever its form, which results in an insecurity of the human agency, its psyche, natural environment and social environment, its regulation and laws, and the injustices in social management that they receive, are violations of their rights, human rights[(7)].

The social security program prioritized to cover the entire population first is a health insurance[(8)]. The principle of the health insurance program in Indonesia formulated by Law Number 40 of 2004 concerning SJSN. One of social insurance principle is a compulsory fund collection mechanism that comes from contributions to provide protection for the socio-economic risks that happened in participants and or their family members. As for the principle of equity, each participant who pays contributions will receive health services comparable to the contributions paid[(9)].

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Indonesia's national health insurance program requires participants to contribute every month. After paying, participants have the right to obtain a single identity and benefit from health services[10].

The obligation to join JKN as explained in Article 16 paragraph (1), at the same time followed by the threat of sanctions for those who violate. Article 17 paragraph 1-3 of the BPJS Law states "(1) ... Every person who does not implement the provisions referred to in Article 16 is being the subject of administrative sanctions (2). Administrative sanctions as referred to in paragraph (1) can be in the form of: a. written warning; b. fine; and / or c. do not get certain public services. (3) Imposition of sanctions as referred to in paragraph (2) letters (a) and (b) are carried out by BPJS. (4) Imposition of sanctions as referred to in paragraph (2) letter (c) shall be carried out by the Government or regional government at the request of the BPJS. (5) Further provisions concerning the procedure for imposing administrative sanctions are regulated by Government Regulation[11].

Sanctions do not get certain public services for citizens who do not attend JKN explained in the explanation of the BPJS Law. The explanation is on Article 17 Letter (c). The BPJS Law states that, "What is meant by" certain public services "include processing business licenses, building permits, proof of ownership of land and building rights."

Social Insurance Administration Organization Participants who are in arrears in payment are being the subject of 2% of fine for late payment which then complies with the new regulation in the Perpres number 28 of 2016 which is changed into 2.5%. Important to remember, JKN participants can benefit from JKN having to fulfill their obligations first. Participants who do not pay regularly (delinquent) will also be subject to sanctions. The new National Social Security System in the health sector can be active after the people are forced to pay dues[12].

The problem is "Why is the Indonesian National Health Insurance referred to as the national pseudo social security?"

MATERIALS AND METHOD

This study used a mixed method[13] with a connected normative or doctrinal juridical approach. The approach in this study were: conceptual, statute, comparative and socio-legal approach. Tashakkori & Teddlie as quoted by Susanto stated that a diverse paradigm approach can serve as a basis for carrying out research. Dialectic means rejecting the selection/prioritization of one paradigm above another paradigm. This dialectic means not favoring another paradigm, but rather looking at research with mixed methods or approaches as intentional involvement/application of various devices and their assumptions. According to this view all paradigms are valuable world views, but only partially so there is no problem using multi methods or mixed methods[14].

FINDINGS AND DISCUSSION

Indonesia's national social security system is a social security program that affects hundreds of millions of Indonesians. The national social security system implemented by BPJS cannot be said to be a real social security because of some quite fundamental problems. Researchers have a proposition that JKN as part of SJSN that is managed by BPJS which is not a real social security system, but a pseudo social security system.

The concept of the national social security system is managed by the government[15] through BPJS has been in accordance with the conception of the social security system that is actually desired by the constitution. The state develops a social security system for all people and empowers people who are weak and unable to meet the dignity of humanity[16]. The practice of JKN turns out to regulate an insurance scheme that requires all citizens to take part in social security on the health insurance aspect.

The constitution has ordered that the National Social Security system is an obligation of the state and as such, essentially the implementation of JKN in Indonesia by the BPJS transfers the burden from the government to citizens[17]. In the National Social Security System in the field of health and employment which is applied in the empirical praxis of citizens, it is given an additional burden in the form of compulsory contributions. Fees are paid by each person every month. The contribution system applied in JKN is a real effort to move the burden of implementing JKN to citizens.

The low state budget for Indonesia's health is one indicator of the government's low commitment and the weakness of the health policy. This low commitment with a limited budget is certainly not strong enough to cover the implementation of the social security system

that is the duty of the state so that a solution is needed to cover it. The solution is to move the burden by requiring people to join the BPJS with the insurance paradigm (paying regular premiums).

The application of JKN has an insurance paradigm is a real effort from the government to move the burden of the social security system to citizens. In an ideal condition of citizens are still given an additional burden to pay health social security contributions with the threat of sanctions.

The philosophy of social security must not be mixed with insurance principles. The provisions of the SJSN Law and BPJS Law say about the obligation to pay contributions to the participants. This is being a consideration form of social insurance which is required by the state. According to Salamuddin Daeng, a researcher from the Indonesian Political Economy Association (AEPI) stated that "If social security should not use contributions.

The application of the paradigm and insurance system in the social security policy implementation of the social sector is the answer to the low allocation of government health funds which is only worth less than 5%.

The government does not seem to distinguish between the social insurance system and the social security system. The application of the paradigm and insurance system in national social security is certainly not in accordance with the concept of a social security system which essentially aims to provide protection and social welfare for all Indonesians.

Another problem is that it takes a few days before the benefit package has been paid and they got a Health BPJS card. This makes citizens not think that they do not get full benefits, especially regarding the benefits of being a Health BPJS participant. They cannot access benefits from JKN in the event of health problems. Participants should not have to wait seven days to be served with a benefit package through health services. The sickness cannot be limited to seven days after becoming a participant. Citizens also need services at any time if they are sick[18].

It is very clear that in activating this benefit of BPJS actually does not suitable with human principles. Citizens who get sick but have not become BPJS participants yet are having difficulties with this policy. They will not be able to access JKN unless after the activation period. It is very possible in case of emergency they will die first or not handled well before the JKN activation period. The JKN activation policy a few days after registration actually violates the law as well as being unfair in this case because it should be registered so that you can immediately access JKN. This kind of pattern is not a characteristic or principle of social security that should be.

The principle that characterizes the social security system is, first, the social security program grows and develops in line with the economic growth of a country. This is related to increasing community needs. It is in line with increasing demands in the welfare sector. Social security programs develop first in formal groups, then non-formal. In many countries, the implementation of social security is carried out centrally by the state. The reason is that social security is a non-private public domain. Some countries that practice this include America, Britain, Australia, Malaysia, the Philippines and others. Some indicators show that the social security system is a public domain that must be implemented by the state[19].

Why does the state choose to impose the implementation of JKN on citizens by charging. The transfer of the burden is through a mandatory contribution paid by the citizen even though it should be the responsibility of the state. The state budget allocation in the APBN to be compared with other countries, spending on social security in Indonesia is very small. The field of social security that is implemented is also still very limited[20].

Social insurance is a different thing because there is a role for participants to participate in financing through either social insurance or savings mechanisms. This is despite for the fact that the contribution fee can be a burden for the giver and recipient of work (for formal workers), and of the participants themselves for groups that are independent and capable[21].

The social insurance mechanism is the backbone of social security funding in almost all countries. The amount of the contribution is associated with the income level to ensure that all participants are able to contribute[22].

The concept of JKN is a pseudo social security

(in the legislation is referred to social security). JKN implementation is referred to social insurance so that the state can impose its financing on citizens. The state only provides two trillion rupiah for the establishment of BPJS[23]. From this point of view, it is actually seen that through the Social Insurance Administration Organization, the Government intends to release its responsibilities as a national health insurance provider.

The concept of social security, social insurance is really overturned in the implementation of Indonesia's national health insurance. Social security is a macro policy tool to correct inequality distribution by providing assistance to a weak economy or disadvantaged people[24]. Social security should not be enough. It is only the rhetoric of social rights but it is a legal right in basic legal instruments[25].

CONCLUSION

JKN implementation in Indonesia can be called a pseudo national health insurance. In real terms the guarantee is carried out by citizens, for citizens and funded by citizens with the BPJS as a mere implementing agency. The state was not present in financing and JKN in Indonesia and chose to form BPJS as the state's representative in the implementation of BPJS. The burden of implementing JKN is fully charged to citizens while the state is free from hand, even though the juridical development of the social security system is the implementation of the social service function of the state.

ADDITIONAL INFORMATIONS

Conflict of Interest: No

Ethical Clearance: Yes

Source of Funding: authors

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The Effectiveness of Clinical Supervision Model Based on Proctor Theory and Interpersonal Relationship Cycle (PIR-C) toward Nurses' Performance in Improving the Quality of Nursing Care Documentation

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ABSTRACT

Background: Consistent clinical supervision though affects the working performance of nurses, in implementation is often neglected within the setting of developing country of Indonesia. Clinical supervision models of Proctor theory and interpersonal relationship cycle (PIR-C) are made to increase the quality of nursing care documentation.

Methods: The research aims to identify the effectiveness of clinical supervision models based on Proctor theory and interpersonal relationship cycle (PIR-C) toward the nurse performance in improving the quality of nursing care documentation. This research was used as a pre-test post-test experiment involving 100 respondents selected with cluster sampling. Partial Leas square (PLS) was used to examine the factors affecting clinical supervision models of PIR-C while the Wilcoxon Signed Rank Test was used to test the effectiveness of clinical supervision models based on Proctor theory and interpersonal relationship cycle (PIR-C).

Results: The clinical supervision models of PIR-C significantly can improve the quality of nursing care documentation.

Conclusion: This model is recommended to implement in the hospital to enhance the quality of nursing care documentation

Keywords *- Clinical supervision, effectiveness, Proctor theory and interpersonal relationship cycle (PIR-C), nursing care, documentation*

INTRODUCTION

Clinical supervision involves a supportive relationship between supervisor and supervisee that facilitates reflective learning and is part of professional socialization [(1)]. The model of nursing clinic supervision in Indonesia is unclear as to what and how is the implementation in the hospital. Up to this point, it has not yet known the appropriate and practical model that can be applied [(2)]. Proctor's supervisory model is a useful model for implementation and evaluation strategies that provide success in the supervision process [(3)]. Proctor's [(4)] three-function interactive model has gained increasing popularity in nursing and is probably the most frequently cited supervision model in the UK. Proctor's supervision model is the only supervision model that already has internationally validated instruments [(3)]. The clinical supervision model based on Proctor Theory and interpersonal relationship cycle (PIR-C) emphasizes the organizational, work characteristic, and individual factors [(5)] whereas the supervision area is based on the three domains - normative, formative, and restorative [(4)] and the increasing relationship quality between the

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supervisors and the supervisees by implementing the four steps of orientation, identification, exploration, and resolution [6]. The individual factor variable was influenced by some factors, such as capability and psychological characteristics. The organizational factor variable is controlled by elements of reward, leadership, training and development, and the structure of an organization. The work characteristic factor variable is affected by the actual performance and feedback factors[7].

This research purpose is to get descriptions the effectiveness of the clinical supervision model based on Proctor theory and interpersonal relationship cycle (PIR-C) toward to nurse performance in improving the quality of nursing care documentation in public hospital located in Surabaya, the second big cities of Indonesia. The result of developing this model is expectedly to increase the quality of nursing care documentation in the hospital's wardrooms.

METHODOLOGY

This research used a quasi-experimental pre-post test with the complete sampling of 200 nurses in two government hospitals in Surabaya, Indonesia taken each 100 nurses. Their mean age was 27 years (22-30), and 156 (78%) were female, and 44 (22%) were male. 120 nurses (60%) had experience of work more than ten years, 30 (15%) knew work more than three years, and 50 (25 %) had involvement of work more than 15 years. Path analysis with Partial Least Square was used to test the effect of clinical supervision model based on Proctor theory and interpersonal relationship Cycle (PIR-C) toward nurses' performance in improving the quality of nursing care documentation. The data collection was done by the way the questionnaire and observation. The population to bring up this strategic issue is by giving a survey to evaluate the clinical supervision implementation that modified from Manchester Clinical Supervision Scale, an interpersonal relationship from Peplau nursing theories[8] and checklist for evaluation and observation the nursing care documentation in the hospital ward room.

RESULTS

Prior research suggests that a sample size of 100 to 200 is usually a good starting point in carrying out path modeling [9].

The result summary for reflective outer models is presented in Table 1.

Table 1: The result summary for reflective outer models

Latent Variables	Indicators	Loadings	Indicators Reliability	Average Variance Extraction
Individual	Ind_1 Ind_2	0.853 0.900	0.727 0.810	0.768
Organization	Org_1 Org_2 Org_3 Org_4	0.594 0.809 0.632 0.806	0.352 0.654 0.399 0.649	0.513
Work Characteristics	Work_1 Work_2	0.862 0.927	0.743 0.859	0.801
Supervision	Sup_1 Sup_2 Sup_3	0.847 0.736 0.542	0.717 0.541 0.293	0.517
Documentation	Doc_1 Doc_2 Doc_3 Doc_4 Doc_5	0.680 0.791 0.713 0.828 0.716	0.462 0.625 0.508 0.685 0.512	0.558

It is essential to establish the reliability and validity of the latent variables to complete the examination of the structural model. Indicator reliability value is the square each of the outer loadings where the score of 0.70 or higher is preferred. If it is exploratory research, 0.4 or higher is acceptable [10]. Table 1 shows leadership (Org_1) and organization structure (Org_3) are not valid indicators for the organization as well as restorative (Sup_3) is not an accurate indicator of supervision. These three indicators were dropped in the next calculation process.

Traditionally, "Cronbach's alpha" is used to measure reliability in social science research but it tends to provide a conservative measurement in PLS-SEM. Prior literature has suggested the use of "Average Variance Extraction (AVE) for convergent validity " as a replacement [11]. From Table 1, such values are shown to be larger than 0.5 so high levels of convergent reliability have been demonstrated among all five reflective latent variables [11,12].

The score for the path coefficient and t statistic in the inner model are shown in Table 2.

Table 2: The result of path coefficient

No.	Variables	Path Coefficient	T Statistic	Remark
1.	Individual factor → clinical supervision.	0.353	3.389	Significant
2.	Organizational factor → clinical supervision.	0.384	3.650	Significant
3.	Work characteristic → clinical supervision.	0.553	2.552	Significant
4.	Clinical supervision→ the nurse performance	0.270	5.774	Significant

The result indicates that the individual factors positively (capability and skill, psychological characteristics) affect the implementation of the clinical supervision with the path coefficient score of 0.353 and the t statistic is 3.389. The organizational factors (training & development, the structure of the organization) positively affect the implementation of the clinical supervision with the path coefficient score of 0.384 and the t statistic is 3.650. The work characteristic factors (design, feedback) positively affect the implementation of the clinical supervision with the path coefficient of 0.553 and the t statistic is 2.552. The PIR-C clinical supervision model (formative, normative, restorative) positively affects the nurses' performance in improving the quality of nursing care documentation with the path coefficient score of 0.270, and the t statistic is 5.774. The positive sign on the coefficient shows the one-way relationship. This relationship means that the higher the organizational, personal and the work characteristic factors are, the bigger the results in increasing the clinical supervision are.

The result of statistical analysis on nurse performance in documenting nursing care by using Wilcoxon Signed Rank Test shows significance value $p = 0.00$ is smaller than standard value $\alpha = 0.05$ indicating that there is influence of application of clinical supervision model based on Proctor theory and interpersonal relationship cycle (PIR-C) on the performance of nurses in documenting nursing care in the wardroom of government hospitals in Surabaya Indonesia.

The quality of the structural model using R-square of the dependent variables is measured with the Stone–Geisser Q-square test for predictive relevance [13]. The coefficient of clinical supervision and nurse performance is 0.609 and 0.306 respectively. Based on these figures, the Q-square predictive relevance is calculated as follows:

$$Q\,2 = 1 - (1 - R1\,2\,)\,(1 - R2\,2\,)$$

$$= 1 - (1 - 0.609)\,(1\text{-}0.306)$$

$$= 1 - (0.391)\,(0.694)$$

$$= 1 - 0.271 = 0.728\ (72.8\%)$$

Since Q-squares is greater than zero, the model is stable, and the predictive relevance requirement is satisfied.

DISCUSSIONS

The results of this study support previous research in clinical supervision [3,14] that clinical supervision has the potential to improve staff skills that will ultimately

affect the successful attainment of the hospital. Clinical supervision is a tool to ensure or guarantee the completion of tasks following the goals and standards [15]. This study is also following the results of research which shows that clinical supervision can improve the performance of nurses [16] and research found that the use of strategies in the application of clinical supervision can enhance the performance of nurses in the care documentation [17]. This indicates that consistent clinical control affects the working performance of nursing care under the standards of nursing practice.

The clinical supervision implementation is not only to monitor whether all nursing staff performs their duties as well as possible per the instructions or conditions outlined but also how to improve the ongoing nursing process. In the supervision activities, all nursing staff are not objects but also as a subject. Supervision in nursing is done to ensure the operations are carried out per the vision, mission, and objectives of the organization and following predetermined standards. This research is also in line stating one of the factors that affect the performance is supervision [18] where supervision is the process of observing all organizational activities to ensure that all work underway is carried out under predetermined plans.

Supervision of nursing services will benefit the nurses in enhancing feelings of support, reducing professional isolation, decreasing work and emotional fatigue, increasing job satisfaction and morale, and developing professional practice and support in practice [19]. Further, supervision of nursing services can improve the relationship of nurses supervised by supervisors as well as in relationships with other nurses [20]. The use of documentation format in the application of clinical supervision model proctor supervision for normative, formative, and restorative dimensions is helpful to enhance process success and supervision sustainability [21].

The results showed that the nurse's performance in documenting nursing care before clinical supervision of the PIR-C model from supervisors who were trained and guided overall clinical supervision in the category of sufficient means was not optimal. According to the assumption that the researcher has not been optimally the performance of nurse, an executor is seen in the work result of nurse implementing that is illustrated from nursing care documentation which not yet according to set a standard. In the assessment aspect, the nurse has not undertaken all assessments by the prescribed assessment format and tends only to formulate an actual nursing diagnosis. In the issue of planning, the preparation of interventions tends to be routine and has not been referring to nursing problems experienced by patients, and has not yet described the involvement of patients and families. In the aspect of the implementation of nursing has not fully implemented independent actions according to the intervention already written but more to the act of devolution. The researchers also obtained part of the filling documentation of nursing care is not synchronized from assessment, diagnosis, intervention, implementation, and evaluation.

The implementation of clinical supervision model based on Proctor's theory and interpersonal relationship cycle (PIR-C) in two public hospitals in Surabaya on the normative aspect through interpersonal relationship cycle stage (identification, orientation, exploitation, and resolution) has been established. The nurse conducts a complete and systematic review based on the assessment guidelines so that the diagnosis is in the form of an actual diagnosis, potential, and health promotion. The nurse's ability to formulate nursing diagnoses enables nurses to pinpoint care goals appropriately and develop comprehensive intervention plans. Through this activity supervisors and nurses sit together to understand, improve, and build commitment to improving performance based on predetermined standards. Through this activity is expected to change the attitude and actions of nurses in implementing nursing care.

Supervisors need to collaborate with nurses in analyzing situations, so they can work together to be able to recognize, clarify, and identify existing problems. At the identification stage of supervisors and nurses to work together in solving problems. At the exploitation stage allows the nurse to feel a quality relationship with the supervisor and have a good perception to the supervisor that the supervisor can improve knowledge and solve problems faced by the nurse related nursing care documentation. The resolution stage explains that the nurse's needs have been spotted and there is a collaborative effort between the supervisor and the executing nurse. This resolution enables the nurse's ability to fill in complete and qualified nursing care documentation.

Interpersonal relationship cycle (orientation,

identification, exploitation, and resolution) orientation in the formative aspect has spurred the implementing nurse to provide knowledge and skills to the nurses related to the filling of nursing care documentation, discussion pertaining to the nurse's experience in filling the literature of nursing care (reflective practice) knowledge and latest policy about nursing care documentation. The application of the interpersonal relationship cycle (the aspect of orientation, identification, exploitation, and resolution) to the restorative element has spurred the implementing nurse to provide motivation, empathy, and help the nurse reduce burnout and conflicts while filling in nursing care documentation.

CONCLUSION

The nurse performance on nursing care documentation is vital to get serious attention and better management of Surabaya public hospital considering some risks and impacts that can arise related to documenting nursing care, i.e., unavailability of a database associated with the process of care nursing and complaints of nursing actions that lead to the legal domain. Support from hospital nursing management in providing support and monitoring is critical to the continuity, sustainability, and successful implementation of clinical supervision. The intervention plan that the supervisor has set up guides the supervisor in carrying out the implementation of clinical supervision to the implementing nurses in the hospital wards followed by evaluation and follow-up. The clinical supervision activities based on the theory of Proctor and the interpersonal relationship cycle (PIR-C) conducted regularly, scheduled, and will spur the nurse's performance in documenting the nursing care so that the result of complete and quality nursing documentation.

Ethical Clearance: The Ministry of Health Polytechnic Malang approved this research to be conducted in Surabaya, Indonesia. A research permit was requested from the local health authorities.

Conflict of Interest: Nil

Source of Funding: Ministry of Health, Republic of Indonesia.

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Psychoreligy Strengthens the Parent Self-Acceptance on Children Suffering Cancer

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ABSTRACT

Cancer of children affect to the parent self-acceptance toward children conditions. The purpose of this study was to investigate the effect of psychoreligy intervention to strengthen self-acceptance on mother of children suffering cancer. The design of this study was pre-experimental study. The sample size were 25 mothers who met inclusion criteria taken by purposive sampling. The inclusion criteria were mothers who have children suffering cancer less than six months and moslem. The independent variable was psychoreligy intervention (pray and dhikr), while the dependent variable was parent self-acceptance. Data were taken by using questionnaire then analyzed by using Wilcoxon Sign Rank Test with α=0.05. The result showed that most of mothers stayed on denial and bargaining phases. While after the psychoreligy intervention all the mothers change on acceptance phase with statistical test p=<0.001. It can be concluded that psychoreligy intervention strengthens mothers self-acceptance related with children condition. This study suggested to give psychoreligy therapy as an alternative nursing intervention for mother with acceptance problems when caring her children. Further research can develop psychoreligy in general religion not only for Moslem.

Keywords: *psychoreligy, self-acceptance, mother, pediatric cancer*

INTRODUCTION

According to WHO data in 2012 the number of cancer patients in all age groups reached 14,067,894 sufferers[1]. Cancer in children has increased every year. About 110 to 130 cases per million children per year. 80% of childhood cancer cases occur in developing countries. Indonesia as a developing country has a child cancer incidence rate of 11,000 per year child cancer found[2]. The highest childhood cancer is ALL (acute lymphoblastic leukemia).[3] There was an increase in 2009 to 2010. Four cases of cancer in other children were Neuroblastoma, LNH (Non Hodgkin's Lymphoma), Retinoblastoma and Wilms Tumor[3].

Parents who have children with cancer will face various problems related to psychological problems such as hopeless and depression. The degree of hopeless between mother and father is higher experienced by mothers[4]. Parents, especially mothers, were found to be 36.4% having experienced the phase of self-depression major depression and 18.2% moderate depression. The process of self-acceptance in the form of depression and anxiety in mothers with children with cancer is higher than other chronic diseases[4]. Based on research shows that most parents have a negative self-acceptance response in accepting the condition of childhood cancer[5]. The phenomenon that occurred in the Pediatric Oncology ward Soetomo General Hospital Surabaya found that mothers who had children with cancer diagnosis experienced psychological disorders in the form of shock, not accepting the reality, mistrust, sadness, anxiety, anger, depression and feeling hopeless. The similar study showed that 20% of mothers who have diagnosed children with cancer experience stress in the moderate category[6]. Based on the theory of mourning Kubbler Ross explained that physiologically humans undergo 5 stages of grieving begins with rejection (denial), anger (anger), bargaining (bargaining), depression (depression), and accept (acceptance)[7]. Someone who drags on in a condition of grieving and not quickly towards the stage of accepting (acceptance) so that disrupt the task and its main role function is said

to be in the condition of pathological grieving[7].

Patients and family face intense stress caused by cancer's diagnosis and its treatment[8]. Parents who show depressiveness signs more often use denial, behavioral disengagement, self-blame strategies and less self-distraction, active coping, positive reframing, humor, acceptance than parents without depressiveness signs[9]. The process of self-acceptance for religious individuals is closely related to divine values. Understanding each incident as the destiny of God Almighty fosters a sense of sincerity while at the same time creating a new source of religious power[10]. Psychiatric therapy may be an alternative solution to overcome psychological problems. Psychoreligi therapy is a form of psychotherapy that combines modern mental health approaches and approaches to religious aspects aimed at improving coping mechanisms[11] . Dhikr means remembering or awareness of the presence of God everywhere and at any time, as well as awareness of his being together with beings[12]. Someone who is religious or obedient to his religious teachings is relatively healthier and able to overcome problems[13.] on the description, the researchers are interested in examining the application of psychiatric therapy in prayer and dhikr to increase self-acceptance in mothers who have children with cancer.

MATERIALS AND METHOD

The design of this study uses a pre-experimental study. Dependent variables were measured twice before intervention and after intervention. The population of this study were all mothers who had cancer-treated children in the pediatric oncology ward. A sample size of 30 respondents who met the criteria for inclusion included mothers who had cancer children less than 6 months, and mothers who were Muslims.

The independent variable in this study was psychoreligi which contains guidance on pray and dhikr. While the dependent variable in this study was the phase of mother self-acceptance. The instrument in the study used a modified questionnaire from the concept of Kubbler Ross[9] and developed by Kurnia[5] . The instrument is filled by the mother without coercion from the researcher.

This research instrument has been tested for validity obtained 25 valid items with a reliability value r = 0.968 (r> r table, r table = 0.396). Pray and dhikr psychoreligy instruments was module containing guidance and therapy reading. This research protocol has received ethical approval from the health research ethics commission of Soetomo General Hospital with certificate number 83 / Panke. KKE / II / 2017 was declared ethically feasible.

The study began with the administration of a pre-test, then the pretest data were analyzed. The data showed that there were no respondents who had a self-acceptance phase, so that they met the inclusion for psychoreligy intervention. Then the researcher explained that psychoreligy intervention was done one day five times after the five daily prays with a duration of 10-15 minutes, the duration of the intervention was done within 7 days (a week) starting from the date the researcher distributed the booklet, the intervention was monitored and guided directly by the researcher every day after the respondent fulfills the afternoon pray. The monitoring and mentoring process was carried out in groups of around 3-5 people each groups. All respondents who participated in the study were cooperative with the intervention provided, so that no respondents experienced a dropout.

The final stage of data collection was a self-acceptance questionnaire fulfillment for the second time after the intervention was complete. The second data collection was carried out after the respondent had done the psychoreligy intervention of pray and dhikr for the last time. The second data was used as posttest data. Pre and post test results were analyzed using Wilcoxon signed rank test with a significance level of $\alpha = 0.05$.

FINDING

The results showed that the majority of the study respondents were at the age of 26-35 years as many as 15 respondents with a percentage of 60%. Distribution of education levels found that the majority of research respondents were at the high school level as many as 12 respondents with a percentage of 48%. Distribution based on work found the majority of research respondents worked as housewives and private employees, each of 12 respondents with a percentage of 48%. The income distribution of the majority of respondents is in the income <Rp.500,000 as many as 12 respondents with a percentage of 48%. Financing distribution was obtained by all respondents using BPJS services as many as 25 respondents with a percentage of 100%. The distribution of treatment time is found to be majority within 1-2 months with a total of 16 respondents with a percentage

of 64%. (table 1).

The results of the pre-test obtained were 12 respondents (48%) in the denial stage and 9 respondents (36%) were in the bargaining stage. While the post-test results obtained by all respondents (100%) are in the acceptance stage. The results of statistical tests using Wilcoxon signed rank test showed that the value of p = 0,000 means that the value of p 5 0.05, this result indicates that there is an influence between psychoreligy intervention on the level of self-acceptance of mothers who have children with cancer (table 2).

Table 1. Demographic characteristics of respondents mothers who have cancer children

No	Demographic	Indicators	Frequency	%
1.	Umur (years old)	17-25	7	28
		26-35	15	60
		36-45	3	12
		46-55	0	0
2.	Education	Junior high school	11	44
		Senior high school	12	48
		Diploma	2	8
3.	Occupation	Housewives	12	48
		Farmer	1	4
		Employee	12	48
4.	Income (IDR)	<500.000	12	48
		500.000 – 1.500.000	4	16
		1.500.000 – Rp. 2.000.000	9	36
5.	Funding	Government insurance	25	100
		Self-funding	0	0
6.	Leng of stay (months)	< 1	1	4
		1 - 2	16	64
		> 2 – 3	5	20
		> 3	3	12

Table 2: Level of self-acceptance of mothers who have children with cancer before and after psychoreligy intervention

Self-acceptance phases	Pre-test		Post-test	
	Frequency	%	Frequency	%
Denial	12	48	0	0
Anger	2	8	0	0
Bargaining	9	36	0	0
Depression	2	8	0	0
Acceptance	0	0	25	100
Total	25	100	25	100
Wilcoxon signed rank test	p =< 0.000			

The results showed that almost half of the respondents had a level of self-acceptance in the denial phase before psychoreligy intervention. According to Kubler-Ross said that first reaction of individuals who experience loss is shock, disbelief, or denying the fact that loss actually occurs[7]. This relates to the characteristics of education and income of respondents. Education is a formal means of getting information, forming rational thinking patterns and emotional maturation. Most respondents have education in high school level, these conditions make respondents still have a level of education in sufficient categories so that the process of receiving a diagnosis of cancer in their children has a tendency to rejection or denial. Revenue as an indicator of respondents' level of adequacy in material aspects, especially finance. Most respondents have a low income category of less than five hundred thousand rupiahs. Low income causes limitations on the financial access of respondents, even though all respondents are guaranteed medical expenses with government insurance, namely BPJS, but for daily needs and non-medical care costs, they still need a source of personal or self-financing costs.

Self-acceptance phase experienced by respondents other than denial also has a phase of bargaining. The stages of bargaining are shown in the form of presuppositions if only a re-examination is done on the child, it might get better results and if I try to give the best to my child, maybe my child will get well soon. According to Kubler-Ross said that in the bargaining phase there is a delay in awareness of the reality of the loss and can try to make the agreement smoothly or openly as if the loss can be prevented. Individuals may try to bargain by asking God for mercy[7] .

After psychoreligy intervention, all respondents have a stage of self-acceptance in the acceptance phase. According to the theory proposed by Kubler-Ross said that in the acceptance phase related to the reorganization of the feeling of loss, the mind which is always centered on the missing object begins to diminish or disappear[7]. Individuals have accepted the reality of the loss they experienced and began to look forward. Changes in the stage of mothers who have children with cancer become acceptance is the influence of psychiatric therapy of prayer and dhikr. Pray and dhikr therapy provides tranquility while restoring individual consciousness to the power of the Essence of Allah SWT. This gives rise to strength and sincerity for the mother in facing the reality that happened to her child.

Study in Iran showed that that participation in spiritual therapy program is associated with improvements in spiritual well-being and Quality of Life (QOL) on women with Breast Cancer[14]. The goals of psychology include cleansing the heart of diseases, both illnesses related to God, with oneself (freeing oneself from being, with other humans and the universe), mastering the influence of primitive impulses[15]. Psychological therapy of prayer and dhikr is closely related to aspects of spirituality. The spiritual aspect is an important part of the human component besides biological, psychological, and social. Nurse as a care giver and also researcher have to more to implement inter professional research and practice efforts related to spirituality and spiritual care[16].

CONCLUSION

Psychoreligy interventions can strengthen the mother's self-acceptance response in the face of children suffering from cancer. Psychoreligy interventions can provide peace in the mind of parents, so they are more resigned and accept the provisions given by God. Tranquility in parents can be a strength to treat cancerous children without feeling heavy. It is recommended for nurses to be able to apply psychoreligy interventions in caring for children and parents in the child's oncology room to overcome rejection or psychological problems related to the stages of self-acceptance of mothers who have cancer children.

Conflict of Interest: There is no potential conflict of interest over the publication of this article.

Funding: This study and publication was self-funding by Authors.

Ethical Clearance: This study did not use animals and does not mention the identity or medical record of the respondents. This research protocol has received ethical approval from health research ethics commission.

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Ex-Leprosy Patients Empowerment for Improving Living Quality through Empirical Rational Strategy in Makassar 2018

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ABSTRACT

Leprosy is still a public health problem in Indonesia. The impact is complex including medical, social, economic, cultural and security aspects. This study aimed to determine the formulation of a rational empirical strategy consisting of attitudes, life skills, work, economics, motivation and self-confidence, the implementation of empirical strategies and evaluation of rational empirical strategies for ex-leprosy in Makassar. This research used qualitative approach. Research side was on Jalan Dangko Makassar which is a leprosy village. Key informants included the Chairperson of the RW (sub-village) while the usual informants were lepers.

This reserach showed by looking at the formulation of rational empirical strategies including attitudes of life skills, work skills, economics, motivation and self-confidence of former lepers. In the implementation phase of a rational empirical strategy, researchers teach them to make various kinds of handicrafts and in the evaluation stage of rational empirical strategies, researchers try to market these items either directly or through social media applications. Cross-sector studies are needed to provide a more comprehensive approach to strenghten their empowerment.

Keywords: *Empowerment, quality of life, strategy, rational empirical strategy.*

INTRODUCTION

Leprosy is a public health problem in Indonesia and the impact is very complex both from the medical, social, economic, cultural and security aspects. Leprosy is generally in developing countries, and most sufferers are from the weak economy. This is as a result of the country's limitations in providing adequate services in the fields of health, education, socio-economic welfare of the community 1.

WHO 2 emphasised that Leprosy is curable with multidrug therapy (MDT). It is transmitted through droplets, from the nose and mouth, during close and frequent contacts with untreated cases. The number of cases is quite high and according to WHO that untreated, leprosy can cause progressive and permanent damage to the skin, nerves, limbs, and eyes. WHO, furthermore, reported that in 2016 there were 216,108 new leprosy cases registered globally spread in 145 countries from the 6 WHO Regions. Indonesia is ranked as the third most leprosy endemic country after India and Brazil 3.

Number of new cases of leprosy and Case Detection Rate (CDR) per 100,000 population respectively were 10,477 and 4.0. South Sulawesi Province had new cases 870 and Case Detection Rate 10,01, even South Sulawesi is recorded with provinces that have the third highest leprosy case after East Java and West Java 4. Based on the results of the recording and reporting of the P2PL of Makassar City Health Office, the number

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of new cases of PB (dry leprosy) in 2015 was 35 cases, while 139 cases of new cases of MB (wet leprosy) were 139 cases. The total leprosy cases are 174 cases. The prevalence of leprosy in Makassar City for the past 3 (three) years has decreased 5.

To reduce leprosy cases, WHO launched the Global Leprosy Strategy 2016–2020. This strategies aim to reinvigorate efforts to control leprosy and avert disabilities, especially among children still affected by the disease in endemic countries. The strategy emphasizes the need to sustain expertise and increase the number of skilled leprosy staff, improve the participation of affected persons in leprosy services and reduce visible deformities as well as stigmatization associated with the disease. The primary interventions to achieve the targets include: 1). detecting cases early before visible disabilities occur, with a special focus on children as a way to reduce disabilities and reduce transmission; 2). targeting detection among higher risk groups through campaigns in highly endemic areas or communities; 3). improving health care coverage and access for marginalized populations; 4). Endemic countries need to include other strategic interventions in their national plans to meet the new targets 6.

Researchers point out that leprosy stigma has a broad influence on clients' lives from marriage, work, interpersonal relationships and relationships with the environment 7. Leprosy sufferers are ostracized by their families and communities and generally they are left by their partners for those who have a family 8. Husbands who suffer from leprosy are not included in the decision making and activities in the family and the interaction with other family members is limited 9. Disability in leprosy clients makes it an obstacle in accepting leprosy clients. Mental health problems in leprosy clients have been shown to show a higher prevalence of psychiatric problems. Leprosy clients experience anxiety, loss of self-esteem and poor self-acceptance 10.

The purpose of a rational empirical strategy is the change of knowledge through information or the basis of intellectual thought. The strategy formulation by the Nalacity Community surveying the activities of former lepers and the skills they have to focus on producing feasible alternative strategies by supporting external and internal factors. The Nalacity community began using a variety of techniques obtained, namely former lepers with methods of sewing skills and in the implementation of the Nalacity community strategy utilizing information systems and media as a promotional and marketing tool to distribute the work of former lepers. In the evaluation phase, the Nalacity community strategy saw that with the sewing skills, the former lepers could channel their talents and also earn their income.

This study deals with the empowerment of ex-leprosy patients to improve the quality of their lives through rational empirical strategy. The results of this study are expected to help in improving the economy of the former lepers. Skills and independence are very important for former lepers who do not have decent work.

MATERIALS AND METHOD

This type of research is qualitative 11,12. This research aimed to get in-depth information about empowerment of leprosy patients to improve the quality of life through a rational empirical strategy using independent interviews. This research was conducted at Jalan Dangko Makassar in 2018 which is an area that inhabits many lepers or former lepers. This research was conducted in March-April 2018. The key informants in this study were the RW leaders. Regular informant is in this study were former lepers.

Research data sources were primary data and secondary data. The instruments used in this study were cameras, voice recording devices and field notes. Data collection method was In-depth Interview. In-depth interviews were conducted with informants who were considered able to provide accurate data in accordance with the questions regarding the variables studied. The second method of data collection was observation. This method was done by observing the informants' daily life. This method aims to help the data obtained through in-depth interview techniques. Furthermore, the third data collection technique was documentation. Documentation included interviews with informants. Data analysis was by grouping or collecting interview results in accordance with the objectives of the study, categorizing, analyzing, then interpreting and presented in a narrative manner.

RESULTS AND DISCUSSION

Variables in this study are the strategy formulation consisting of attitudes, life skills, work skills, economics, motivation and confidence; strategy implementation,

and strategy evaluation.

1. Strategy Formulation

a. Attitudes

Based on interviews with informants, the attitude of former lepers when they found out that leprosy was diverse.

"Like being desperate, so I said to die or kill myself because there is no point in living". (HMR, 43 years)

"In the past, I didn't have hope, I'd better end my life, if I hadn't sinned to commit suicide maybe we would have killed ourselves, but we were still given the power by God not to commit suicide" (AQR, 46 years).

"Many of them feel isolated in their homes due to their illness". (MSK, 50 Years).

Based on interviews with informants regarding family attitudes to them when they had leprosy as follows:

I left because I was shunned by my family, there was no family who wanted to help, there was a sense of revenge with my family" (HSN, 45 years).

Family attitudes toward them vary, in general are quite good. They were helped and encouraged by the family to go for treatment, but some of them did not care.

Furthermore, attitudes of the community to the ex-leprosy, can be seen from the interview as follows:

"I experience discrimination, parents also experience discrimination with their neighbors, we also experience discrimination with family, because this disease is disgraceful, stigmatized, that leprosy is caused by illicit relationships such as menstruation and sexual relations (AQR, 46 years).

The attitude of society varies. Some people's attitudes stay away from them because they are afraid of being infected and some are disgusted, but some accept their condition.

b. Life skill

Life skills of former lepers are based on interviews from various research informants, both RW heads and people who have had leprosy.

"Yes, I received stitches, but now I'm not strong anymore because of uric acid" (HRM, 68 years).

"I can make a hijab brooch" (SRN, 39 Years).

Lepers have the skills to develop. They can make doormats, hijab brooches, dress sewing, bags of used goods. There are also people who are good at gardening.

c. Occupation

The work of lepers is not too much, even most of them do not have a job. Maybe because it is related to their physical and health conditions. They are parking attendants, and beggars. Others are as tailors and as independent consultants about leprosy.

"My work is now as a beggar, I have no one foot" (IGS, 55 years).

"I am a parking attendant on Jalan Sulawesi" (MSM, 30 Years).

d. Income

The income of lepers is not fixed, but some say that their income is around Rp. 500,000 per month.

"I usually get 500,000 per month, that's not enough for everyday needs, too many children" (RHM, 46 Years).

e. Motivation

The sufferers still have the motivation to recover, especially when they are actively involved in the organization. That is why they are diligent in treatment.

"Surely they have motivation, such as motivation to recover because I see them active to go for treatment" (MSK, 50 Years).

The form of family motivation is in the form of accompanying them to go for treatment to health care facilities, even the family also suggests doing traditional medicine. There is also a motivation to come from the patient himself to do medication.

"My family used to accompany me to go for treatment" (HMR, 43 years).

"My parents used to say don't stop mabbura ugi (IDS, 72 years).

There are also people who provide support and motivation to the patient to do treatment, but there is also

no care for them.

f. Confidence

The confidence of former lepers is important. initially it was difficult because it was not accepted by family and society. But now it is slowly being accepted by the community especially since they have started to get involved in the organization.

"Before in the organization, self-confidence was very backward, collapsed, but after we were taught to organize, self-confidence arose again, we considered ourselves as with other people" (MTR, 51 Years).

"There is a sufferer worse than me, that makes my confidence to live" (AQR, 46 years).

"We sometimes still feel shy with this disease" (SRN, 39 Years).

The conclusion is that self-confidence for lepers has begun to emerge, moreover they have begun to be involved in the organization or socialization about the importance of health, building their motivation for life and continuing treatment. Even so, not a few are still feeling ashamed, especially those who have been disabled because they are late in treatment.

2. Implementation of Rational Empirical Strategies

In the formulation of the strategy, researchers implemented the empowerment of people who have had leprosy by forming handicraft groups. Some types of handicrafts are, for example, hijab brooches and key chains to improve their living and economic improvement. Figure 1.1 illustrates their craft making.

Figure 1.1: Documentation of their craft making

The tools used include scissors, gun glue and needle threads, while materials such as tile, flannel, ribbons, beads, hangers and pins.

3. Evaluation of Rational Empirical Strategies

This study shows that former lepers still face many things. They have problems relating to attitudes, life skills, work skills, income, motivation and confidence.

They live in a village in Makassar City which is dominated by lepers or former lepers. The purpose of allocating them is to make it easier to control, monitor and handle their various problems and needs. Patients or former sufferers of this center have very high psychosocial problems because they are not accepted by their families and even the community. They are ostracized by the surrounding environment. They are also not confident in their health conditions. This condition strengthens for them to be limited in interacting with their community environment. Because they are limited in interacting with other people, they also have limited access to finding sources of life to meet their daily needs.

Community empowerment for them is needed 13,14. The purpose of this empowerment is that lepers or former lepers must be able to help themselves. They themselves can help themselves in the long run. Former lepers cannot depend on the government because in this way the government does not provide educational value. Government responsibility is certainly important but for lepers, they must also rise up to fight themselves and their environment.

Their needs are very complex 15. Their needs are health services, decent living needs, housing needs, security needs, needs to be appreciated and accepted by family and society 8,16.

Another approach for lepers or former lepers to solve health problems, their social environment and physical environment is needed. The setting approach (healthy city or healthy alley or healthy village) as an approach that has been successfully tested in several developed countries needs to be done to see the changes that occur 17,18. This approach suggests that lepers are not just a medical problem, but this involves food, safety, environment and housing problems that require a more comprehensive approach. Settlement area arrangements, public facilities and infrastructure, healthy and independent social life, food and nutrition security, must also apply to them as important indicators 19-21. Health services for lepers also need to be strengthened, especially in this era of national health insurance 22.

CONCLUSION AND RECOMMENDATION

Based on the results of this study, it can be concluded that by looking at the formulation of rational empirical strategies including attitudes of life skills, work skills, economics, motivation and self-confidence of former lepers, we can formulate strategies for example by making handicraft groups. In the implementation phase of a rational empirical strategy, researchers teach them to make various kinds of handicrafts and in the evaluation stage of rational empirical strategies, researchers try to market these items either directly or through social media applications. Cross-sector studies of leprosy sufferers are needed to provide a more comprehensive approach both from the health, social, religious, environmental and economic aspects.

Conflicts of Interest: Nil

Ethical Clearence: Taken from the Muslim University of Indonesia, Makassar Indonesia.

Source of Funding: Nil

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Safety Risk Factors amongst Online Motorcycle Taxi Drivers Who Provide Public Transportation in Depok, Indonesia

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ABSTRACT

In Indonesia, motorcycles are typically the first choice and favourite form of transportation, particularly since they were integrated with the country's online transportation-for-hire system. This system, known as'online ojek', was organised by a number of companies. This employment type, which involves drivers who work as independent contractors rather than employees, is characterised by weak engagement of the company with the drivers, making it difficult to ensure drivers' health and safety. As a result, it is important to understand the safety risk factors affecting online ojek drivers. This research was qualitative and quantitative in nature and took place in the cities of Depok, Bekasi, Bogor, and Tangerang. A total of 101participants were selected by purposive random sampling. The research found that 48.04% of participants had experienced a 'near miss' whilst driving, caused by a lack of concentration, and 67.65% of respondents blamed their lack of mental focus on fatigue. Furthermore, we discovered that 41.18% of participants sleep fewer than six hours per day, and 47.06% work 11–15 hours per day. Additional factors that affect fatigue are motorcycle vibration and road noise. Moreover, all respondents showed signs of musculoskeletal disorders, with 25% indicating they felt pain in the low back and 17% in their thighs.

***Keywords**: fatigue, safety, online motorcycle drivers, sleep, work duration*

INTRODUCTION

The National Statistic Center (2016) reported that the number of motorcycles owned in Indonesia has experienced a rapid increase within the past ten years, with the current number of motorcycles being 76.6 million(1). At the same time, the Indonesian Motorcycle Industry Association reported that, in 2017, the Western Java Province had the highest motorcycle purchase rate in Indonesia, with 674,642 motorcycles being sold that year.

Reasons for this high rate of motorcycle usage are varied and include the availability of easy credit, economical usage costs, the need to travel only short distances, and lifestyle demands. One of the effects of the high number of motorcycles is the blooming of the online-based motorcycle taxi service known as 'online ojek'. This service is considered capable of solving the problem of traffic jams, especially in large cities. As a result of these factors, many people in the community are attracted to becoming online ojek service providers.

Because online ojek companies require no fixed work schedule, but, rather, operate by a minimum target system for drivers, many drivers work to excess after meeting their targets in an effort to earn higher wages. Some drivers work until dusk to meet the daily target and receive a bonus. However, motorcycles are not considered suitable for long periods of travel. This behaviour can increase occupational safety risks, which include driver fatigue and road accidents. According to data published by the Indonesian National Traffic Police, motorcycle accidents represent the highest number of recorded road accidents. According to their official

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website, 31,789 motorcycle accidents were recorded in 2017. Considering the significant safety risks faced by online ojek drivers, it is important to understand the associated risk factors that can contribute to motorcycle accidents and threaten the safety of ojek drivers.

METHOD

This research was a descriptive study based on qualitative and quantitative data collected by questionnaire and deep interview. The research location was the city of Depok in Western Java, Indonesia. The number of respondents was 101, and they were selected through purposive random sampling. The questionnaires underwent both validation and reliability tests.

We aimed to gather in-depth, qualitative data regarding drivers' health complaints in terms of musculoskeletal symptoms (MSS). To that end, a musculoskeletal disorders (MSDs) questionnaire by Nordic Musculoskeletal Symptoms [2] was used in this research. Our collection of quantitative data focused on other aspects that affect safe driving, such as driver rest duration, total distance travelled per day, work hours per day, total number of trips per day, driver age, hand phone placement, and age of the motorcycle.

RESULTS

The drivers' characteristics, as seen in Table 1 below, show that participants aged 26 to 35 years comprised the largest age group in this study (45 drivers, 44.55%). A total of 66 drivers (65.35%) worked between five and ten times per day. The most frequently cited work duration was 11 to 15 hours, which 46.53% of participants indicated as their total number of hours worked per day. The most common distance travelled per day was between 51 and 100 km, which was indicated by 45.10% of participants. The most commonly cited sleep duration (54.90%) was six to eight hours per day. A majority (51.96%) of participants had not experienced a *'near miss'* event, whilst 43.56% of participants reported that they have their motorcycle serviced 11 or more times per year.

Table 1. Drivers' characteristics.

Characteristics of Drivers	**Mean (SD)**		**n %**
Age			
16–25 years old	33.227	20	19.80%
26–35 years old	(8.693)	**45**	**44.55%**
36–45 years old		25	24.75%
46–55 years old		11	10.89%
Work frequency per day			
5–10 times	10.386	**66**	**65.35%**
11–15 times	(4.004)	25	24.75%
16–20 times		10	9.90%
21–25 times		0	0.00%
Work duration			
1–5 hours	10.841	5	4.95%
6–10 hours	(3.659)	40	39.60%
11–15 hours		**47**	**46.53%**
16–20 hours		9	8.91%
Total distance			
1–50 km	78.237	36	35.29%
51–100 km	(50.014)	**46**	**45.10%**
101–150 km		12	11.76%
> 150 km		7	6.86%
Unidentified			
Sleep duration			
< 6 hours	5.940	42	41.18%
6–8 hours	(1.502)	**56**	**54.90%**
> 8 hours		3	2.94%
Unidentified		0	0.00%

Cont... **Table 1. Drivers' characteristics.**

'Near miss' event			
Yes	--	48	47.06%
No		**53**	51.96%
Motorcycle maintenance			
1–5 times/year	8.811	36	35.64%
6–10 times/year	(6.309)	21	20.79%
>/= 11 times/year		**44**	**43.56%**

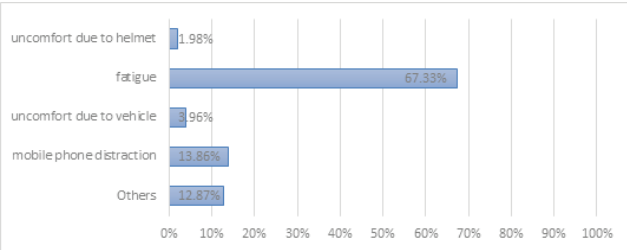


Figure 1. Factors that affect focus whilst driving.

As shown in Figure 1, the factor most likely to affect focus whilst driving was fatigue, which was cited by 67.33% of study participants.

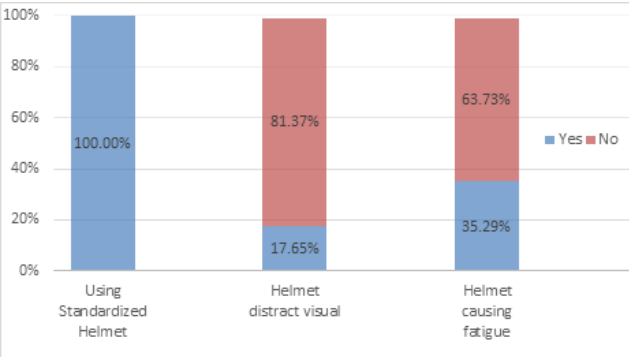


Figure 2. The influence of helmets on driving.

Figure 2 illustrates that 100% of all study participants used a standardised helmet. A large majority (81.37%) indicated that using a helmet was not visually distracting, and 63.73%said that wearing a helmet was not a cause of fatigue.

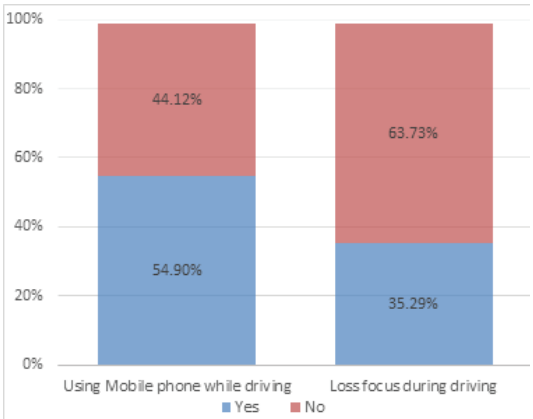
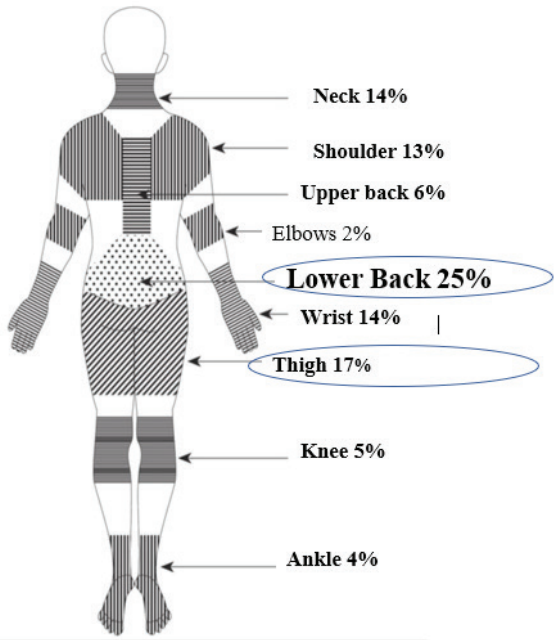


Figure 3. The influence of mobile phones on driving.

Figure 3, which illustrates the influence of mobile phone use whilst driving, shows that 54.90% of all study participants said they use a mobile phone whilst driving, yet, 63.73% said that they did not lose focus whilst driving.



All the respondents felt sign of musculoskeletal disorders. Mostly they felt uncomforted on their lower back (25%) and thigh (17%).

DISCUSSION

Work duration, or period of travel for ojek online drivers, becomes one of the environment/trip factors that could cause fatigue on ojek online drivers. From the result of this research, fatigue is a main reason of concentration loss when driving(3). Other research also shows that work duration becomes a direct causation factor of injury causation on drivers(4). This result is supported with some past research on different countries that shows there are correlations between period of travel, driving time from dusk until late night, with injury causation on drivers (5–7)

Based on European Commission's regulation, driving is not allowed to surpass nine hours every day or 56 hours every week. Resting time on each day must not be disturbed with a minimum of 11 hours out of 24 hours of each day. Resting from 45 minutes is needed after driving for more than 4 ½ hours(8). On Finnish Working Hours Act, a motorcycle driver must take rest for a minimum of 30 minutes on each 5 ½ hours of working period in which working period means all work activities whether it's driving or other tasks(9).

People in high-income countries may use motorcycles as a sport or leisure activity, compared with low-income countries which may use them as a cheap method for transportation. The energy transmitted in crashes will be definitely different in those two conditions with more mortality in those having high speed and energy(10) . In UAE, more local UAE national motorcycle riders use high speed motorcycles for leisure sports. They sustain more serious abdominal injuries compared with expatriates who use cheaper motorcycles for transportation as they sustain more lower limb injuries(11)

In this research, all ojek online drivers have use standardized helmet. The helmets that are used by the driver and its passenger are given from the company. Wearers of non-approved helmets suffer head injuries more than twice as frequently and twice as severe as wearers of approved helmets (12). There are few tests quantifying their actual impact performance(13,14). Additional data for non-approved helmets are thus needed to better demonstrate the benefit of approved helmets for both safety education and forensic purposes.

The usage of helmets for motorcycle drivers is important due to reducing head injury damages when accidents happen. Head injury is a common cause of severe morbidity and mortality in motorcycle crashes(15,16) and it is more common in motorcyclists than car occupants(16) Many studies have shown that motorcycle helmets reduce head injury and motorcycle-related deaths. In the early nineties, the usage of helmet was low and debate regarding its effectiveness was common. Many studies at that time showed that helmets reduce severity of head and spinal injuries, hospital stay, cost, and mortality of motorcycle crashes(17–19) Motorcyclists that does not use helmets are 40% more likely to suffer from a fatal head injury(20) Glasgow coma scale, which is an indicator of severity of head injury, was significantly lower in those not wearing motorcycle helmets, compared with those who did(21).

Some riders are hesitant to wear helmets thinking that helmets are not comfortable and their use adversely affects safety(22,23). This research also discovers that around 18% of respondents feel that helmet distracts their vision when driving and 35% admits of fatigue due to the long period of helmet usage. A study from China has

shown that about 70% of motorcycle drivers thought that helmets were not comfortable; almost 40% thought that helmets block their vision, and 75% used helmets just to avoid police penalties(7) McKnight et al. studied in detail the effect of helmet use on vision and hearing. They concluded that riders accommodate the effect of helmets by rotating their heads to increase the visual field to be similar to non-helmeted riders. The hearing threshold was also not significantly affected by wearing a helmet(24)

Motorcyclists phone usage while driving is a safety concern, especially if this distracting behavior would increase their risk of crash, as reported among car drivers (25,26). This research on ojek online drivers discovers that 55% use their mobile phone during driving due to navigate their way through map application on their mobile phone. 35% of respondents also admit that driving while looking on their mobile phone could cause focus loss. However, little is known about the prevalence and impacts of mobile phone use while riding a motorcycle. It is worth noting that motorcyclists are vulnerable road users in many countries, particularly in developing countries. For example, motorcycles represent 52% of vehicles in Nigeria, 53% in Tanzania, 59% in Thailand, 78% in Laos, 83% in Indonesia, and 95% in Vietnam (27,28). In addition, motorcyclist fatalities account for 34% of all traffic fatalities in Southeast Asia (27) Surprisingly, very few studies have investigated the prevalence of mobile phone use among motorcyclists and associated factors. Phommachanh et al. (2016) found that 40% of high school students admitted to using mobile phone while riding in Vientiane, Laos (29), Contrary other study done by National Safety Council shows that 21% of crashes or 1.1 million crashes in 2010 involve talking on handheld and hands-free mobile phones, and an additional 3% or more crashes or a minimum of 160,000 of crashes in 2010 involve text messaging(30).

CONCLUSION

Ojek online becomes a favorite mode of transportation through its inexpensive cost and short travel time, causing more people joining to be an *ojek online* driver. From the results of this research, 46.53% of *ojek online* drivers' work period is around 11-15 hours per day. 47% of drivers have experienced near miss and the majority of cause is due to fatigue (67.33%). All *ojek online* drivers have used standardized helmet even though 35.29% admit fatigue occurrence due to the long period of helmet usage and 17.65% admit that the helmet distract their vision. 54.9% of *ojek online* drivers use mobile phone during driving although their concentration is disturbed by that specific behavior. The majority of MSDs complaints are at the lower back (25%) and thigh (17%).

Conflict of Interest: NIL

Ethical Clearance: The study was approved by the Ethical Committee of Faculty of Public Health, Universitas Indonesia, Indonesia, the approval number is 366/UN2.F10/PPM.00.02/2018

Source of Funding: This work is supported by Hibah PITTA 2017 funded by DRPM Universitas Indonesia No.601/UN2.R3.1/HKP.05.00/2017.

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Published, Printed and Owned : Dr. R.K. Sharma
Printed : Printpack Electrostat G-2, Eros Apartment, 56, Nehru Place, New Delhi-110019
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